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Yuan et al.

(54) **CONTROL OF SEARCH RESULTS WITH MULTIPOINT PINCH GESTURES**

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(73) Assignee: **eBay Inc.**, San Jose, CA (US)

(21) Appl. No.: **14/292,717**

(22) Filed: **May 30, 2014**

Related U.S. Application Data

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Publication Classification

(51) **Int. Cl.**

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G06F 3/0484	(2006.01)
G06F 3/0488	(2006.01)
G06F 3/01	(2006.01)

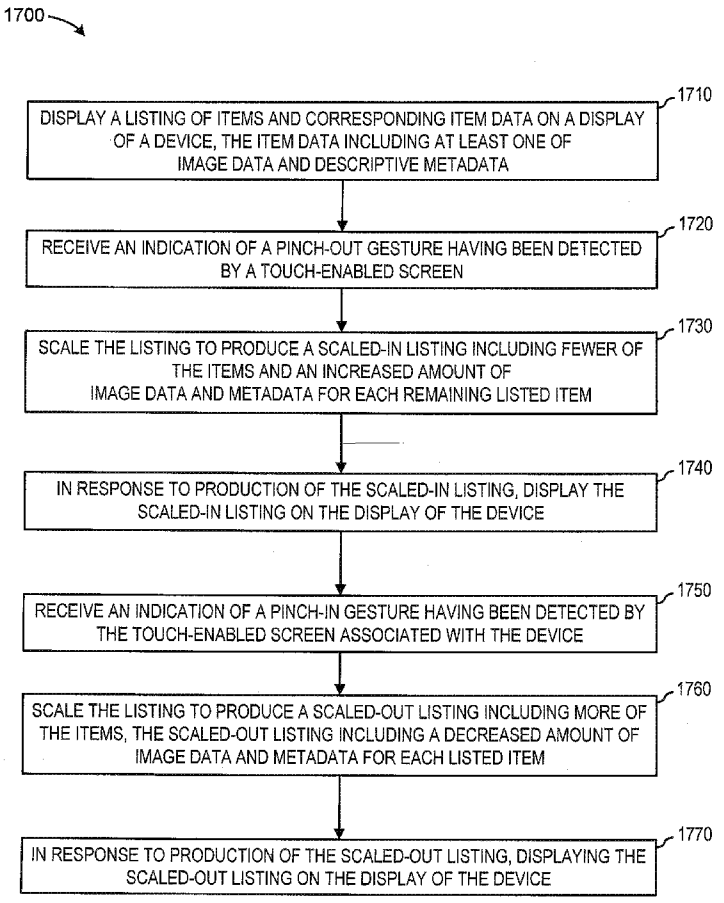
(52) **U.S. Cl.**

CPC ***G06F 3/0482*** (2013.01); ***G06F 3/017*** (2013.01); ***G06F 3/0484*** (2013.01); ***G06F 3/0488*** (2013.01)

USPC **715/823**

(57) **ABSTRACT**

A device displays a listing of items in an item data display area on a display. The device receives an indication of a pinch gesture from a touch-enabled screen and scales a facet of the item data to produce a scaled-facet listing responsive to the pinch gesture. The device scales by modifying a degree of a characteristic corresponding with a facet of the item data displayed in the scaled-data display area in an increasing amount responsive to the pinch-in gesture. The modifying further comprises producing a scaled-out listing implemented as an updated portion of item data having a temporal indicator that is later than an initial display of item data by an amount proportional to a magnitude of a pinch gesture characteristic corresponding to the pinch-in gesture. Finally, the device displays the scaled-facet listing as an updated set of item data.



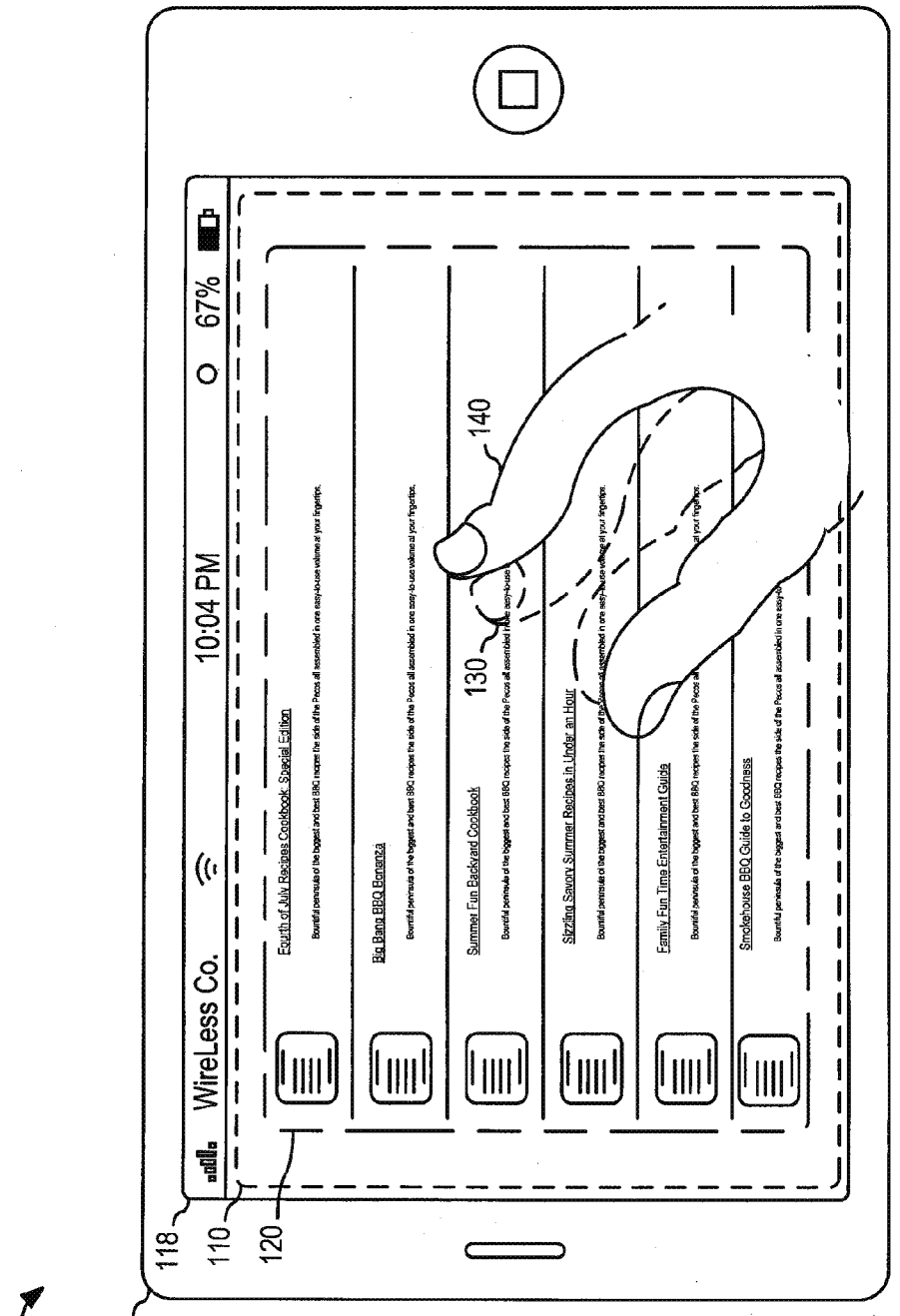

100
105
118
110
120
WireLess Co.
10:04 PM
67%
Fourth of July Recipes Cookbook Special Edition
Big Bang BBQ Bonanza
Summer Fun Backyard Cookbook
Sizzling Savory Summer Recipes in Under an Hour
Family Fun Time Entertainment Guide
Smokehouse BBQ Guide to Goodness
130
140

FIG. 1

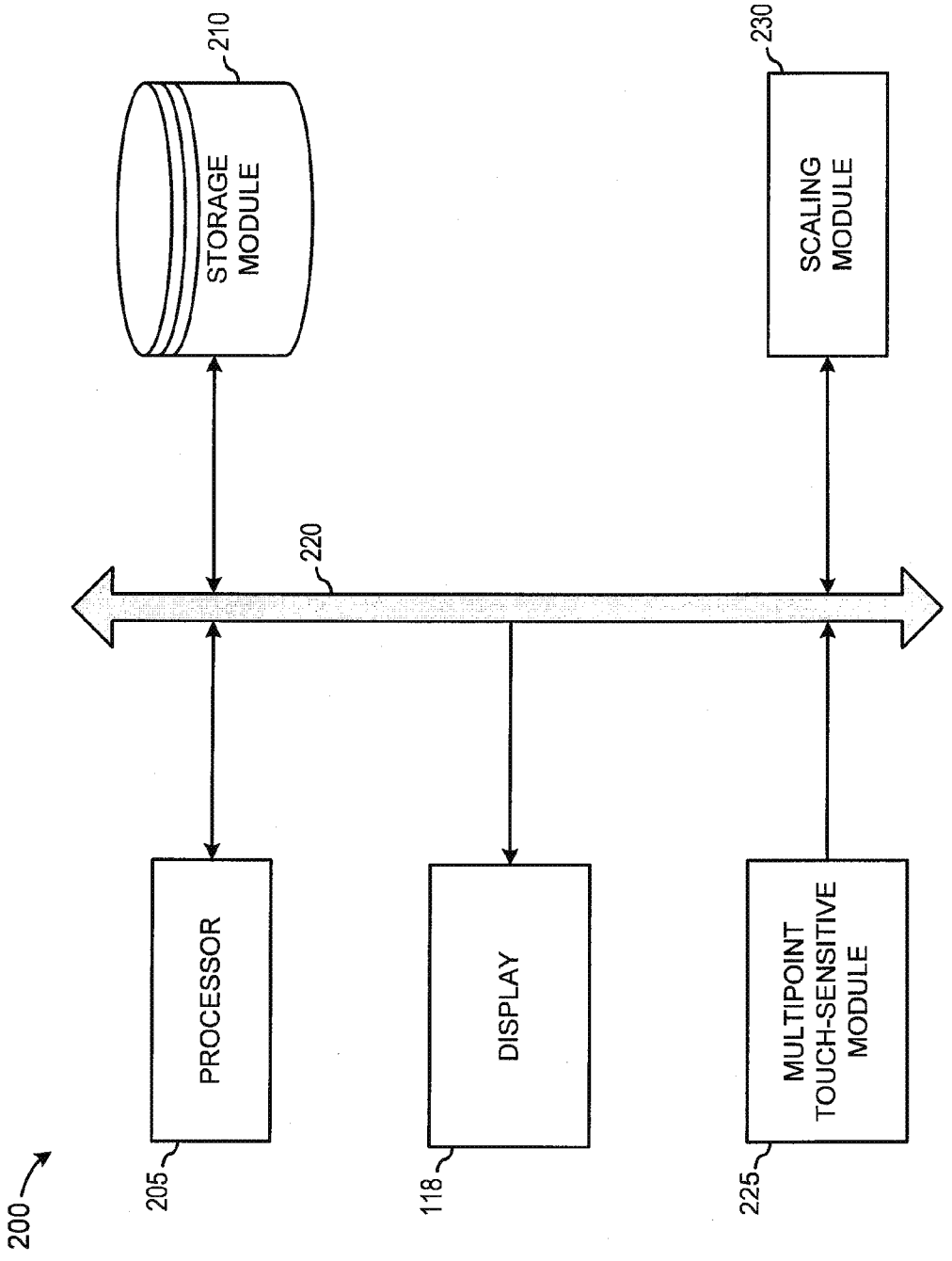

200
205
PROCESSOR
118
DISPLAY
225
MULTIPOINT TOUCH-SENSITIVE MODULE
220
210
STORAGE MODULE
230
SCALING MODULE

FIG. 2

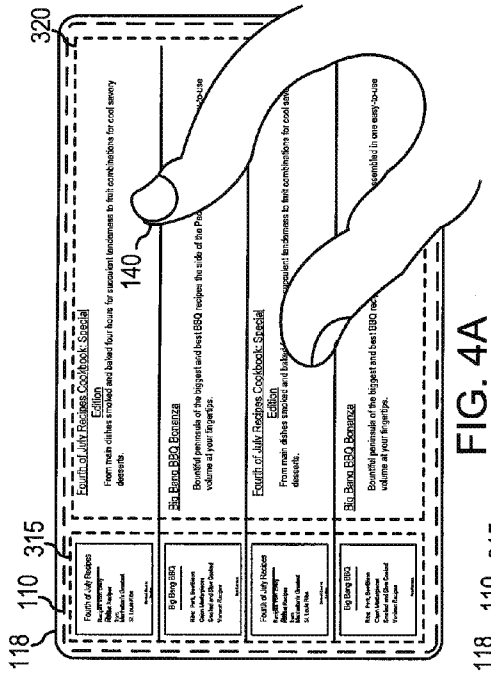


FIG. 3A

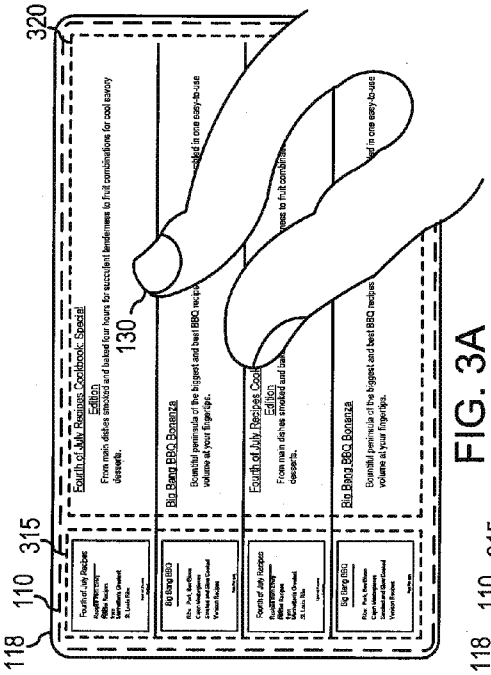


FIG. 3B

FIG. 4A

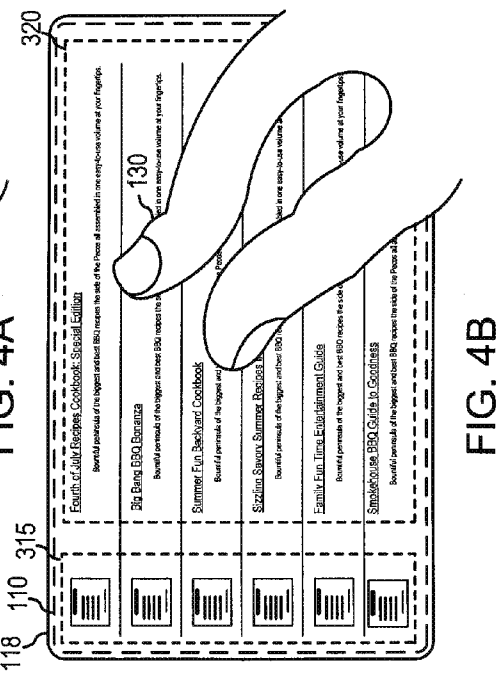


FIG. 4B

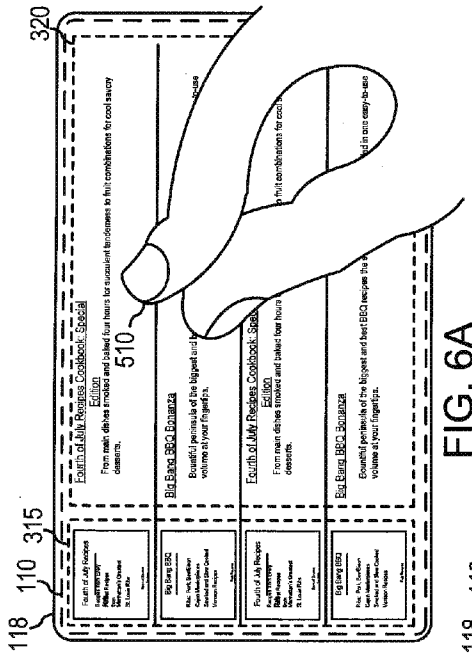


FIG. 6A

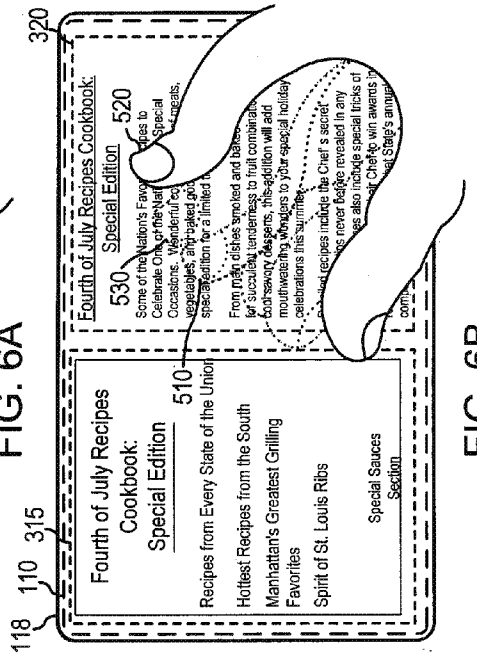


FIG. 6B

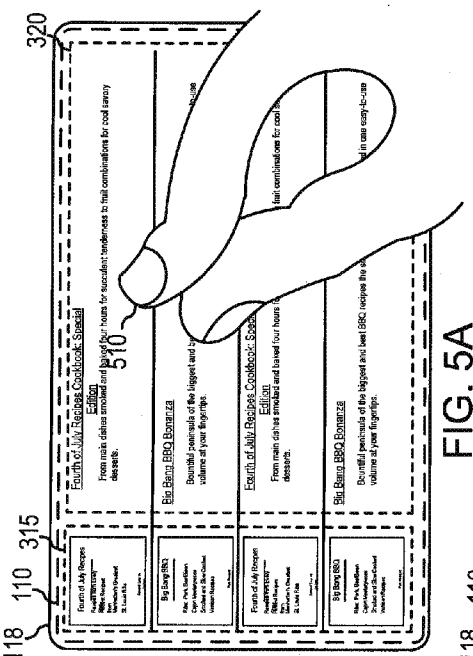


FIG. 5A

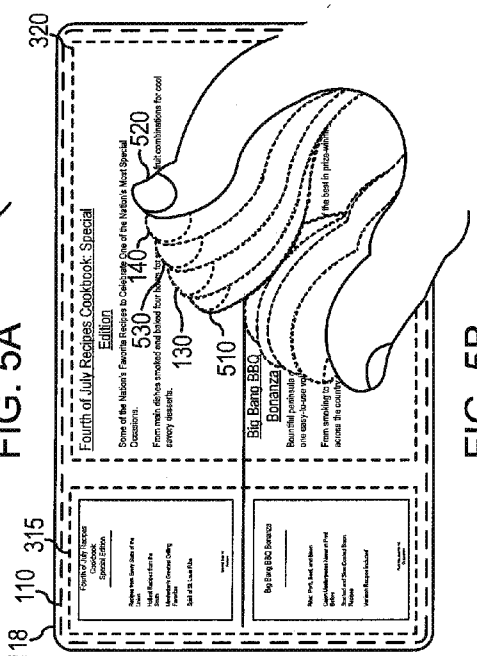


FIG. 5B

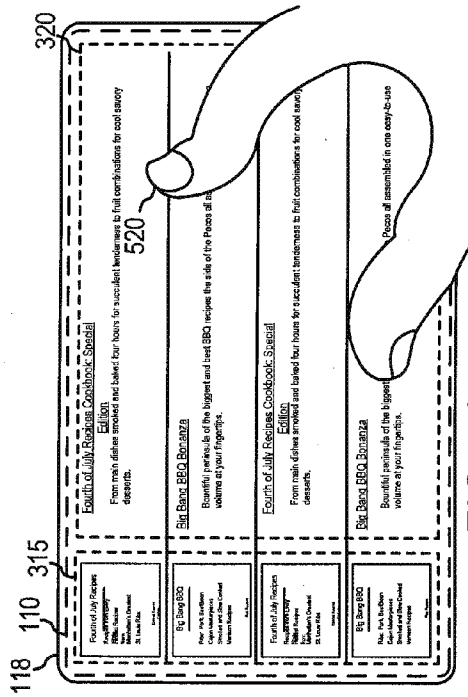


FIG. 8A

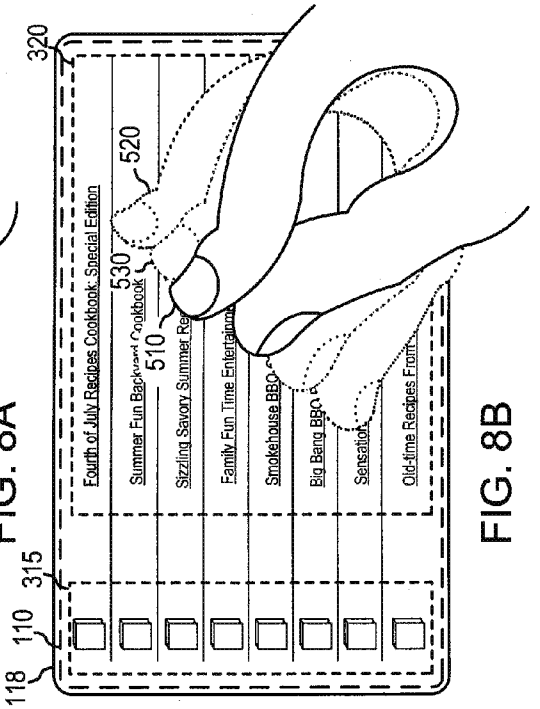


FIG. 8B

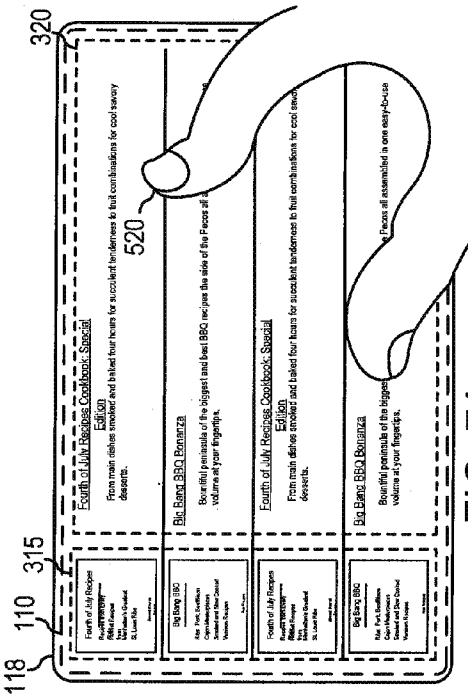


FIG. 7A

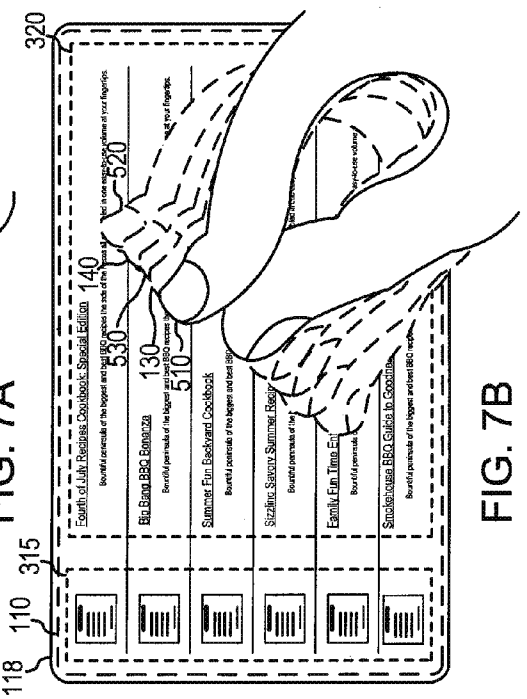


FIG. 7B

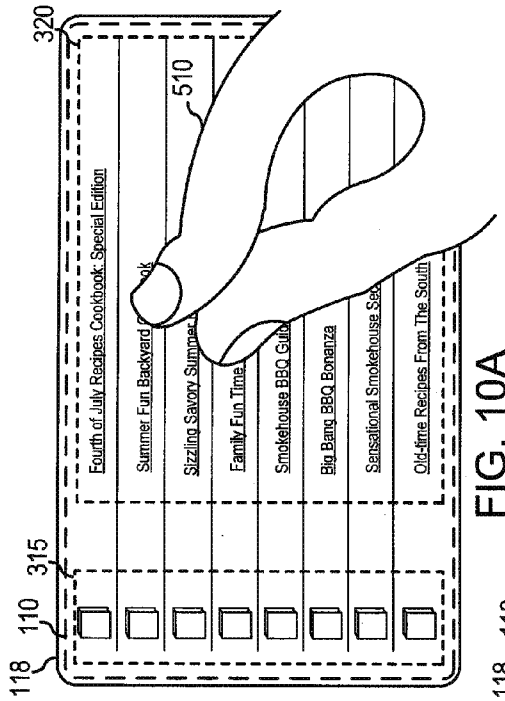


FIG. 10A

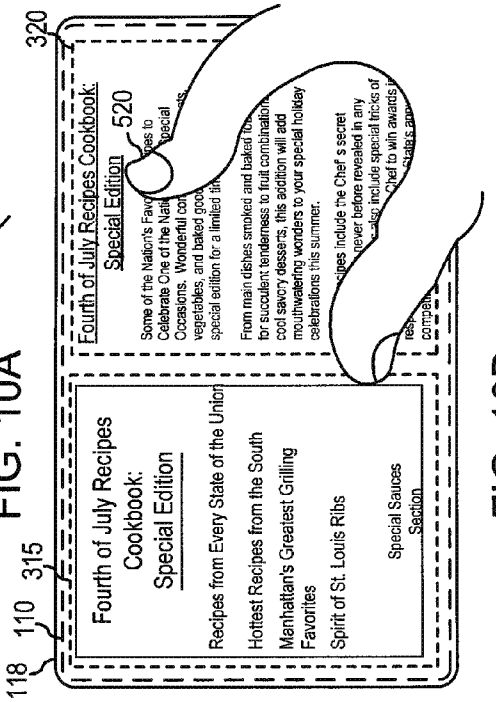


FIG. 10B

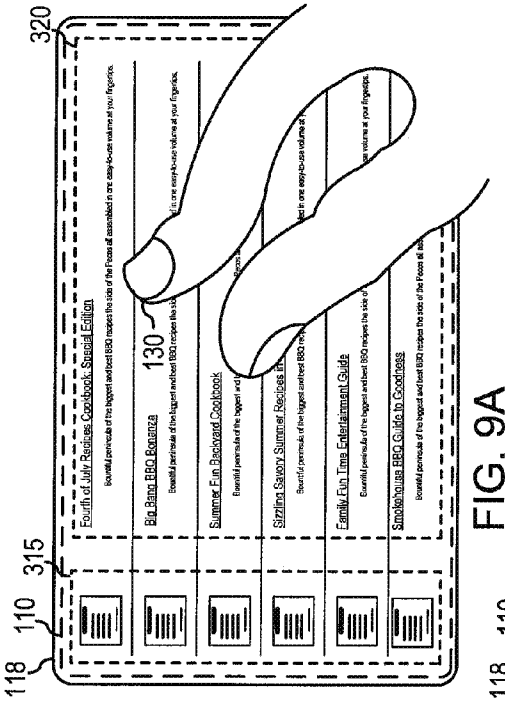


FIG. 9A

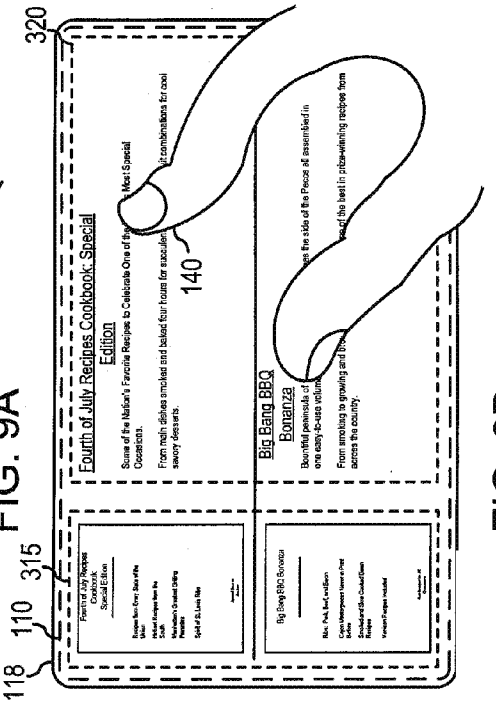


FIG. 9B

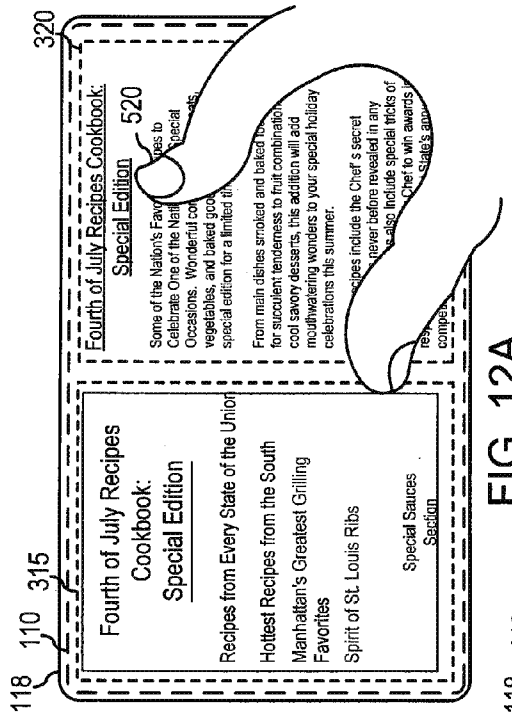


FIG. 12A

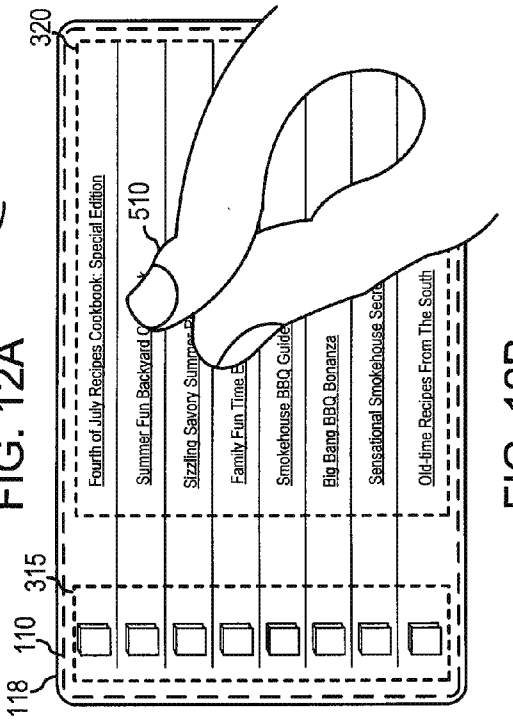


FIG. 12B

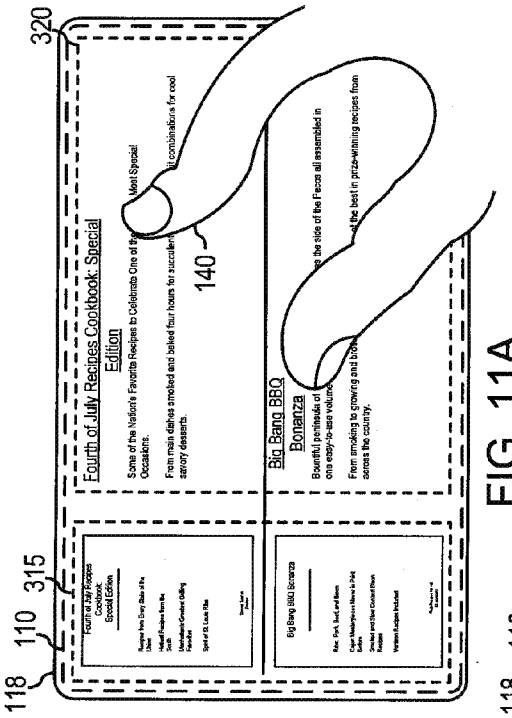


FIG. 11A

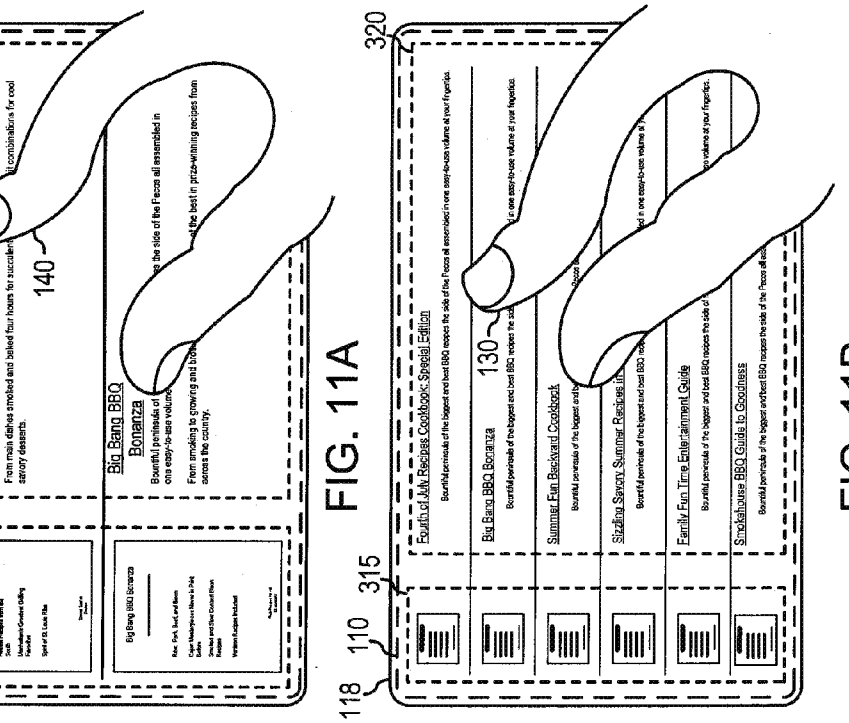


FIG. 11B

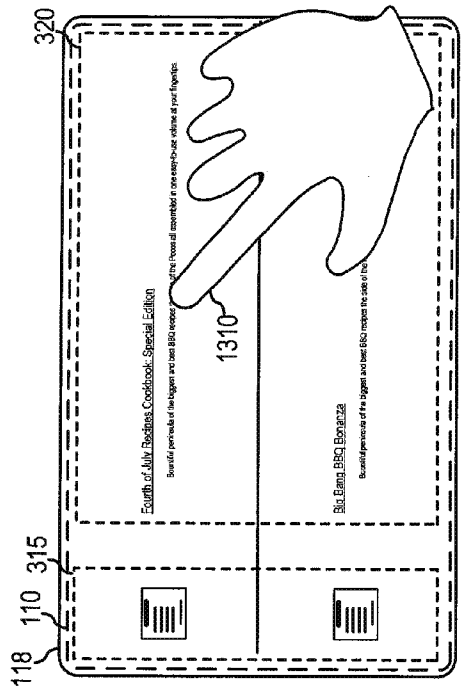


FIG. 14A

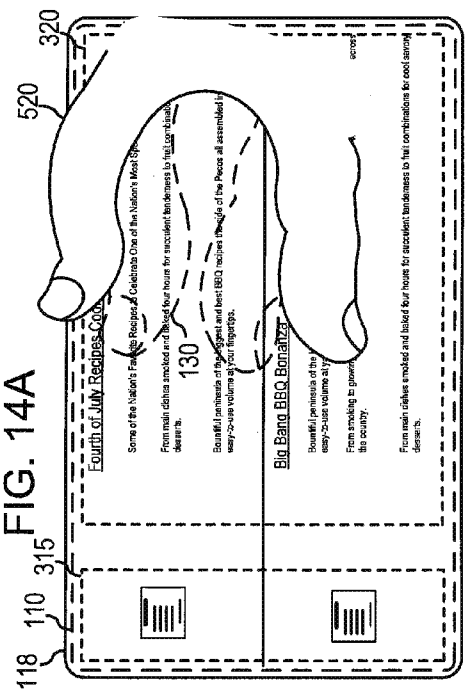


FIG. 14B

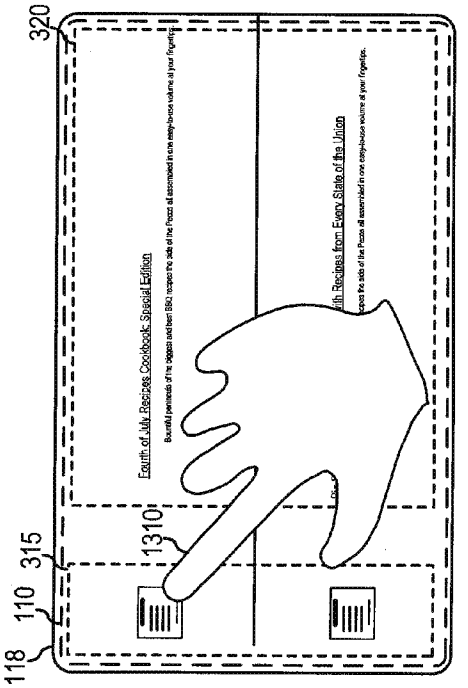


FIG. 13A

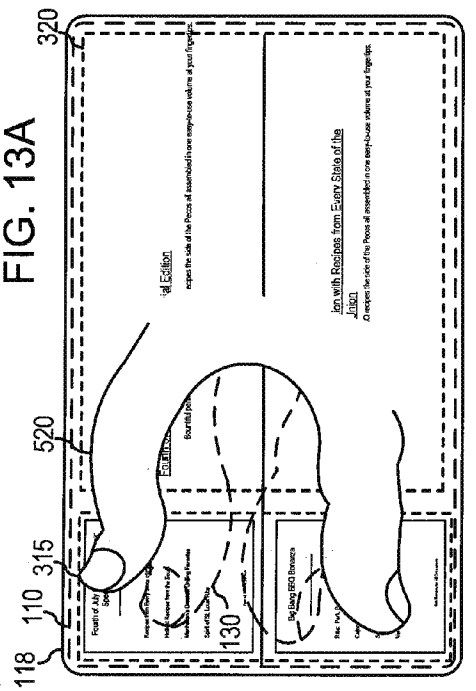


FIG. 13B

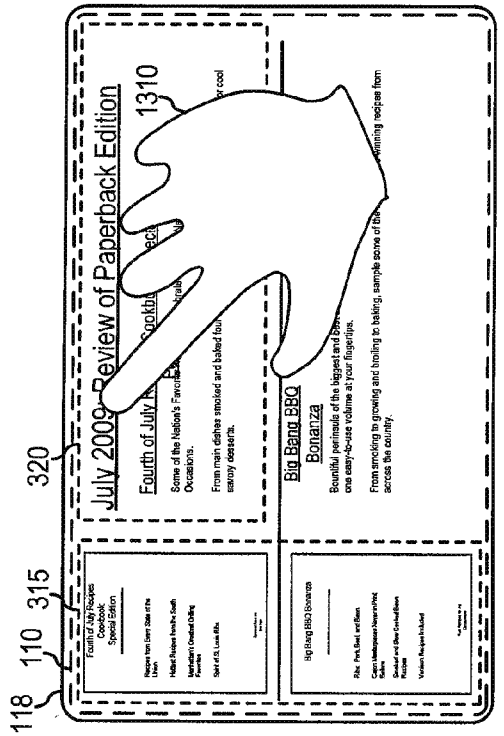


FIG. 15A

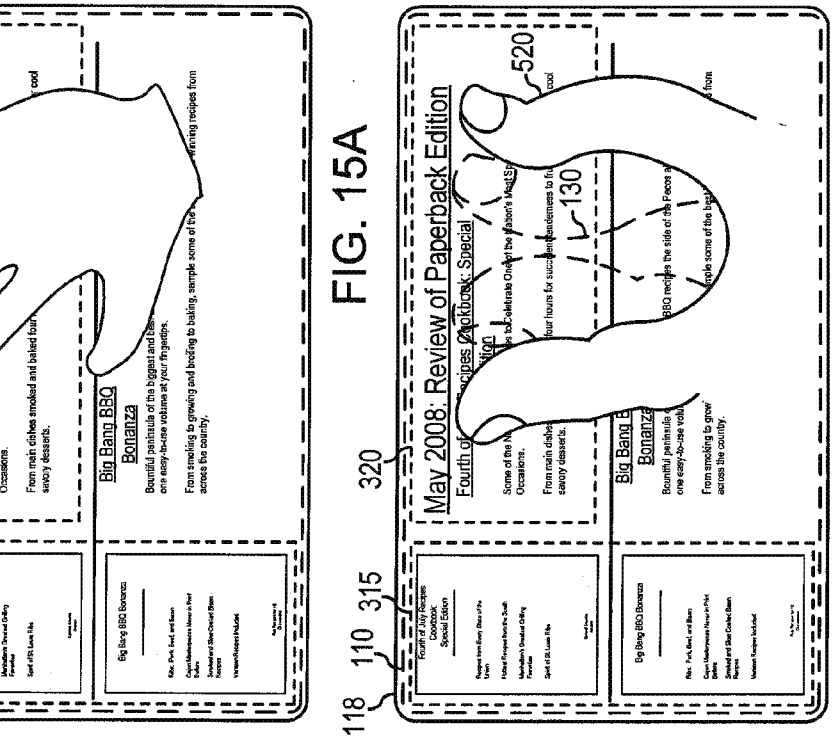


FIG. 15B

FIG. 16A

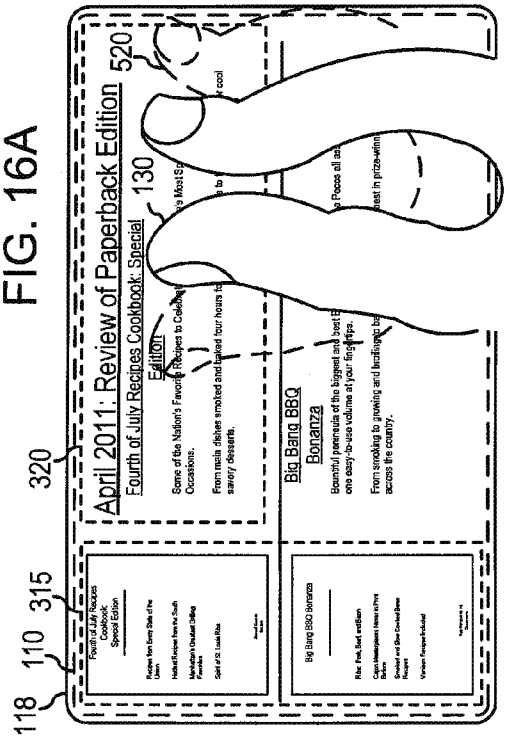


FIG. 16B

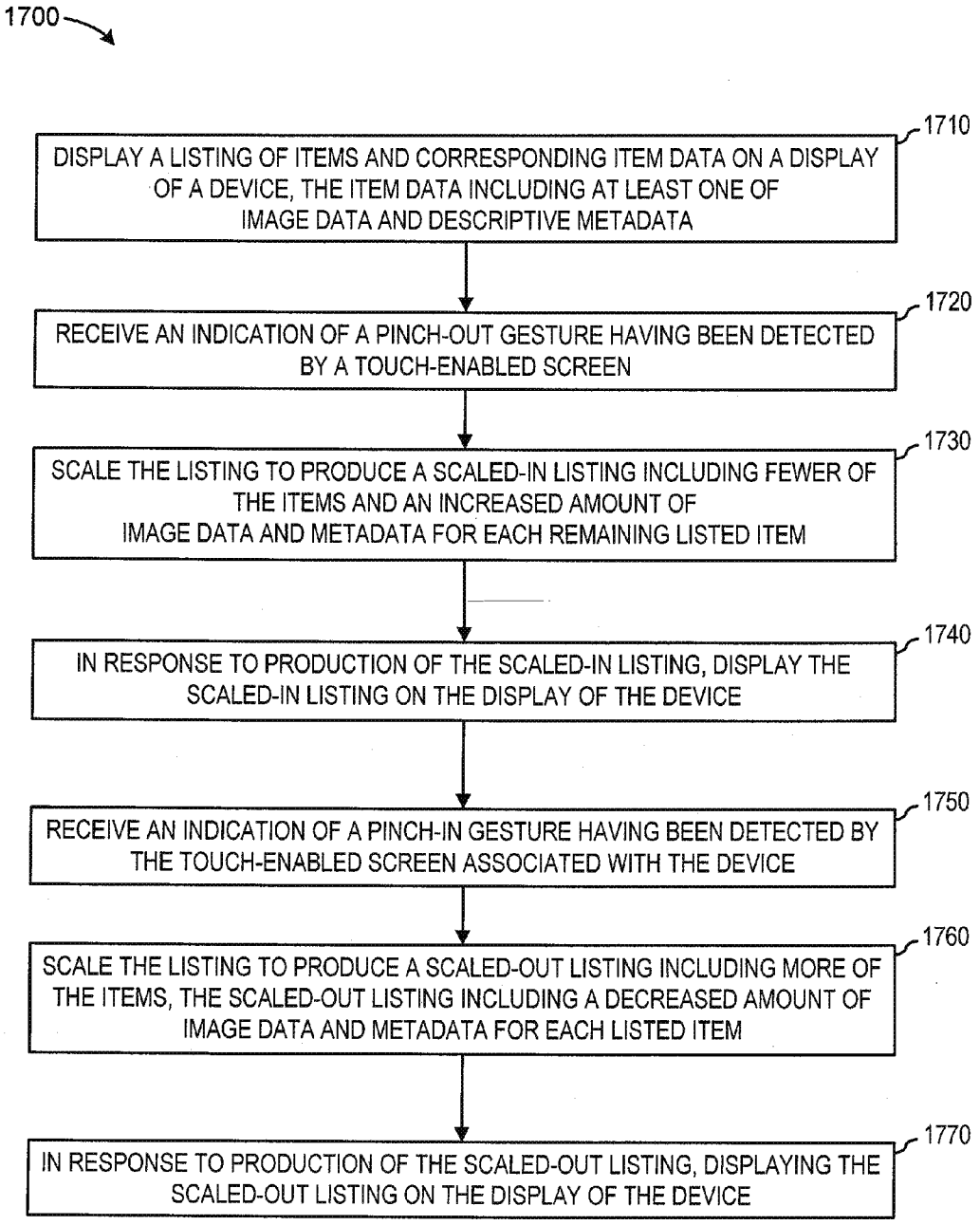

1700
DISPLAY A LISTING OF ITEMS AND CORRESPONDING ITEM DATA ON A DISPLAY OF A DEVICE, THE ITEM DATA INCLUDING AT LEAST ONE OF IMAGE DATA AND DESCRIPTIVE METADATA
1710
RECEIVE AN INDICATION OF A PINCH-OUT GESTURE HAVING BEEN DETECTED BY A TOUCH-ENABLED SCREEN
1720
SCALE THE LISTING TO PRODUCE A SCALED-IN LISTING INCLUDING FEWER OF THE ITEMS AND AN INCREASED AMOUNT OF IMAGE DATA AND METADATA FOR EACH REMAINING LISTED ITEM
1730
IN RESPONSE TO PRODUCTION OF THE SCALED-IN LISTING, DISPLAY THE SCALED-IN LISTING ON THE DISPLAY OF THE DEVICE
1740
RECEIVE AN INDICATION OF A PINCH-IN GESTURE HAVING BEEN DETECTED BY THE TOUCH-ENABLED SCREEN ASSOCIATED WITH THE DEVICE
1750
SCALE THE LISTING TO PRODUCE A SCALED-OUT LISTING INCLUDING MORE OF THE ITEMS, THE SCALED-OUT LISTING INCLUDING A DECREASED AMOUNT OF IMAGE DATA AND METADATA FOR EACH LISTED ITEM
1760
IN RESPONSE TO PRODUCTION OF THE SCALED-OUT LISTING, DISPLAYING THE SCALED-OUT LISTING ON THE DISPLAY OF THE DEVICE
1770

FIG. 17

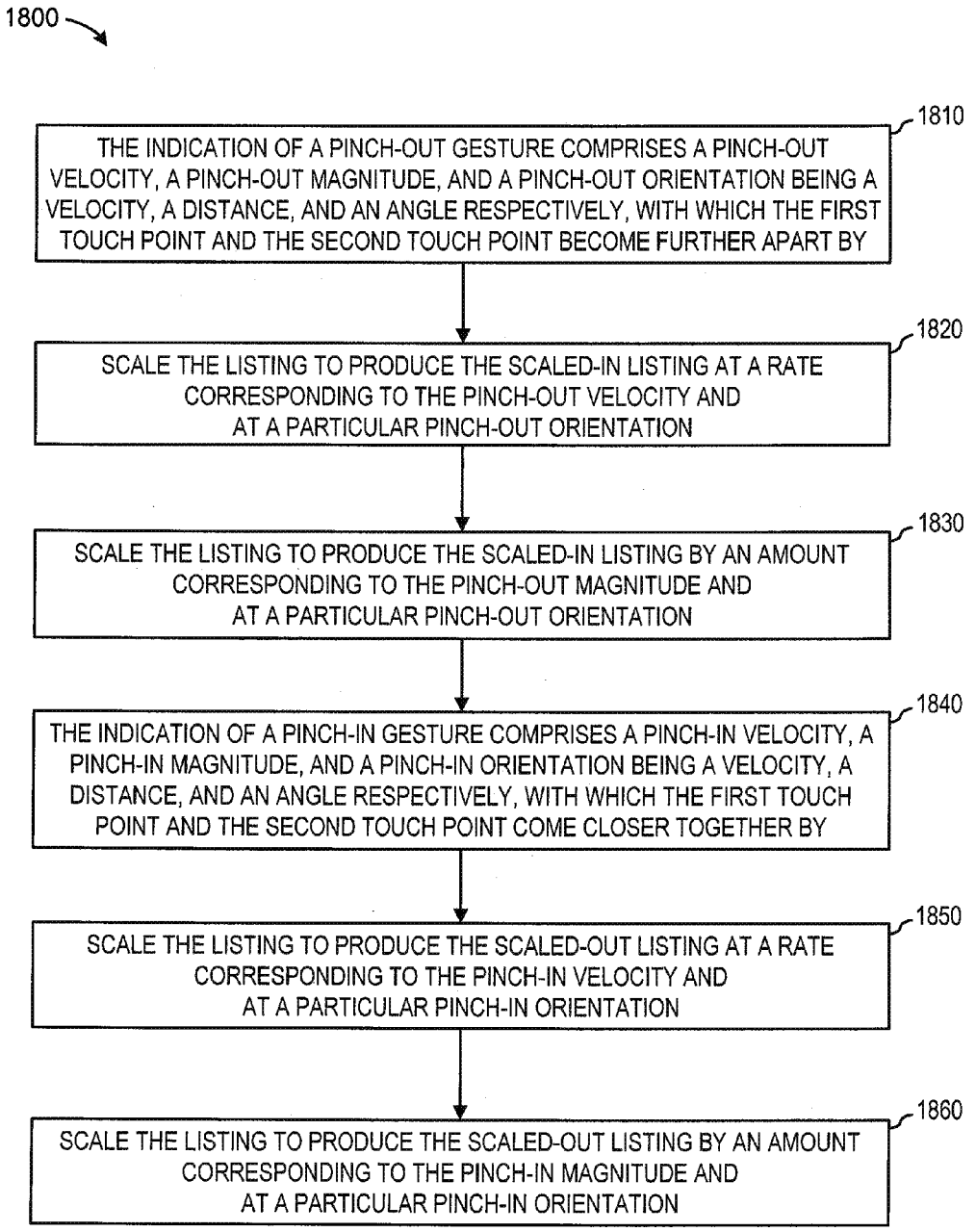

1800
1810
THE INDICATION OF A PINCH-OUT GESTURE COMPRISES A PINCH-OUT VELOCITY, A PINCH-OUT MAGNITUDE, AND A PINCH-OUT ORIENTATION BEING A VELOCITY, A DISTANCE, AND AN ANGLE RESPECTIVELY, WITH WHICH THE FIRST TOUCH POINT AND THE SECOND TOUCH POINT BECOME FURTHER APART BY
1820
SCALE THE LISTING TO PRODUCE THE SCALED-IN LISTING AT A RATE CORRESPONDING TO THE PINCH-OUT VELOCITY AND AT A PARTICULAR PINCH-OUT ORIENTATION
1830
SCALE THE LISTING TO PRODUCE THE SCALED-IN LISTING BY AN AMOUNT CORRESPONDING TO THE PINCH-OUT MAGNITUDE AND AT A PARTICULAR PINCH-OUT ORIENTATION
1840
THE INDICATION OF A PINCH-IN GESTURE COMPRISES A PINCH-IN VELOCITY, A PINCH-IN MAGNITUDE, AND A PINCH-IN ORIENTATION BEING A VELOCITY, A DISTANCE, AND AN ANGLE RESPECTIVELY, WITH WHICH THE FIRST TOUCH POINT AND THE SECOND TOUCH POINT COME CLOSER TOGETHER BY
1850
SCALE THE LISTING TO PRODUCE THE SCALED-OUT LISTING AT A RATE CORRESPONDING TO THE PINCH-IN VELOCITY AND AT A PARTICULAR PINCH-IN ORIENTATION
1860
SCALE THE LISTING TO PRODUCE THE SCALED-OUT LISTING BY AN AMOUNT CORRESPONDING TO THE PINCH-IN MAGNITUDE AND AT A PARTICULAR PINCH-IN ORIENTATION

FIG. 18

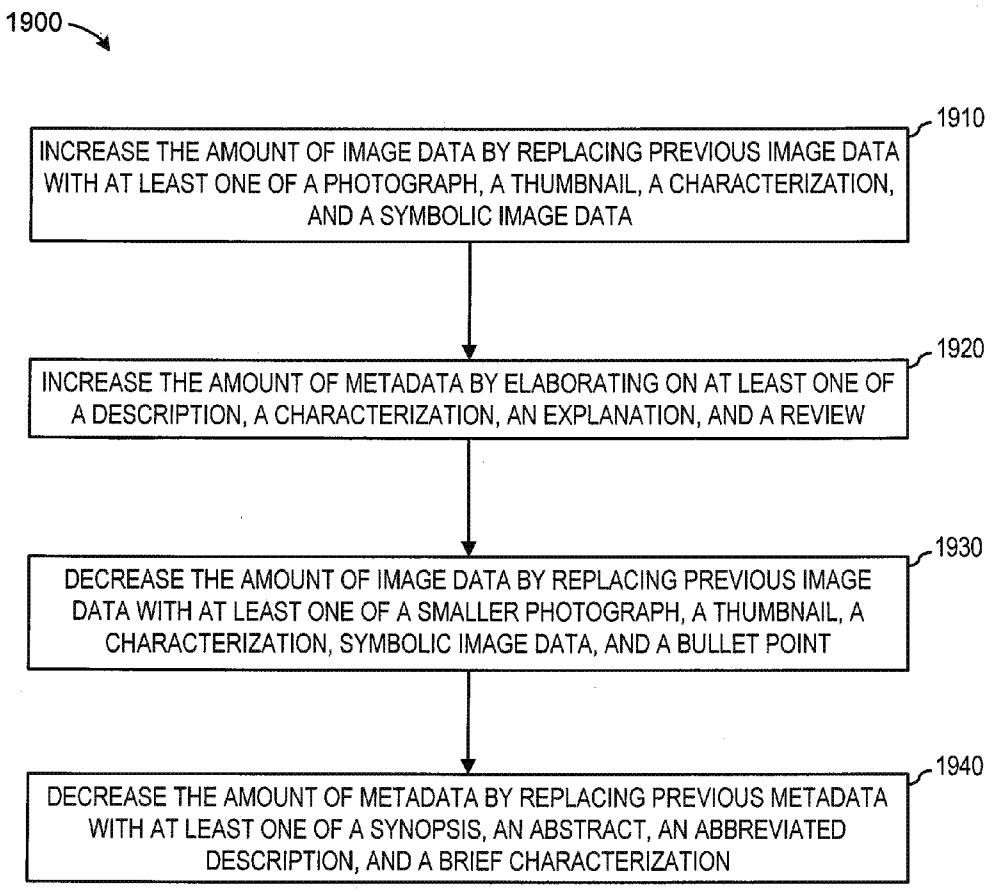

1900
INCREASE THE AMOUNT OF IMAGE DATA BY REPLACING PREVIOUS IMAGE DATA WITH AT LEAST ONE OF A PHOTOGRAPH, A THUMBNAIL, A CHARACTERIZATION, AND A SYMBOLIC IMAGE DATA
1910
INCREASE THE AMOUNT OF METADATA BY ELABORATING ON AT LEAST ONE OF A DESCRIPTION, A CHARACTERIZATION, AN EXPLANATION, AND A REVIEW
1920
DECREASE THE AMOUNT OF IMAGE DATA BY REPLACING PREVIOUS IMAGE DATA WITH AT LEAST ONE OF A SMALLER PHOTOGRAPH, A THUMBNAIL, A CHARACTERIZATION, SYMBOLIC IMAGE DATA, AND A BULLET POINT
1930
DECREASE THE AMOUNT OF METADATA BY REPLACING PREVIOUS METADATA WITH AT LEAST ONE OF A SYNOPSIS, AN ABSTRACT, AN ABBREVIATED DESCRIPTION, AND A BRIEF CHARACTERIZATION
1940

FIG. 19

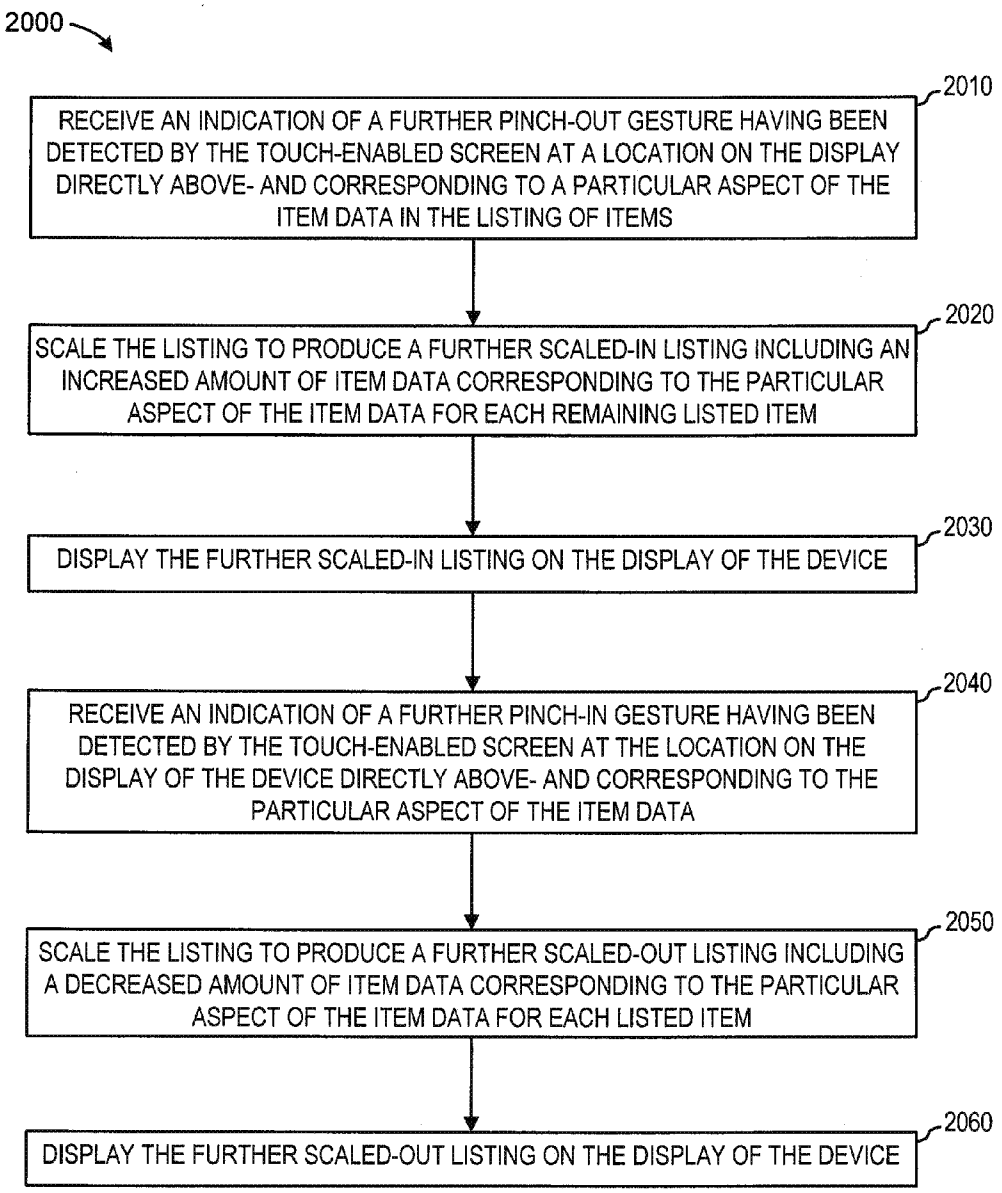

2000
2010
RECEIVE AN INDICATION OF A FURTHER PINCH-OUT GESTURE HAVING BEEN DETECTED BY THE TOUCH-ENABLED SCREEN AT A LOCATION ON THE DISPLAY DIRECTLY ABOVE- AND CORRESPONDING TO A PARTICULAR ASPECT OF THE ITEM DATA IN THE LISTING OF ITEMS
2020
SCALE THE LISTING TO PRODUCE A FURTHER SCALED-IN LISTING INCLUDING AN INCREASED AMOUNT OF ITEM DATA CORRESPONDING TO THE PARTICULAR ASPECT OF THE ITEM DATA FOR EACH REMAINING LISTED ITEM
2030
DISPLAY THE FURTHER SCALED-IN LISTING ON THE DISPLAY OF THE DEVICE
2040
RECEIVE AN INDICATION OF A FURTHER PINCH-IN GESTURE HAVING BEEN DETECTED BY THE TOUCH-ENABLED SCREEN AT THE LOCATION ON THE DISPLAY OF THE DEVICE DIRECTLY ABOVE- AND CORRESPONDING TO THE PARTICULAR ASPECT OF THE ITEM DATA
2050
SCALE THE LISTING TO PRODUCE A FURTHER SCALED-OUT LISTING INCLUDING A DECREASED AMOUNT OF ITEM DATA CORRESPONDING TO THE PARTICULAR ASPECT OF THE ITEM DATA FOR EACH LISTED ITEM
2060
DISPLAY THE FURTHER SCALED-OUT LISTING ON THE DISPLAY OF THE DEVICE

FIG. 20

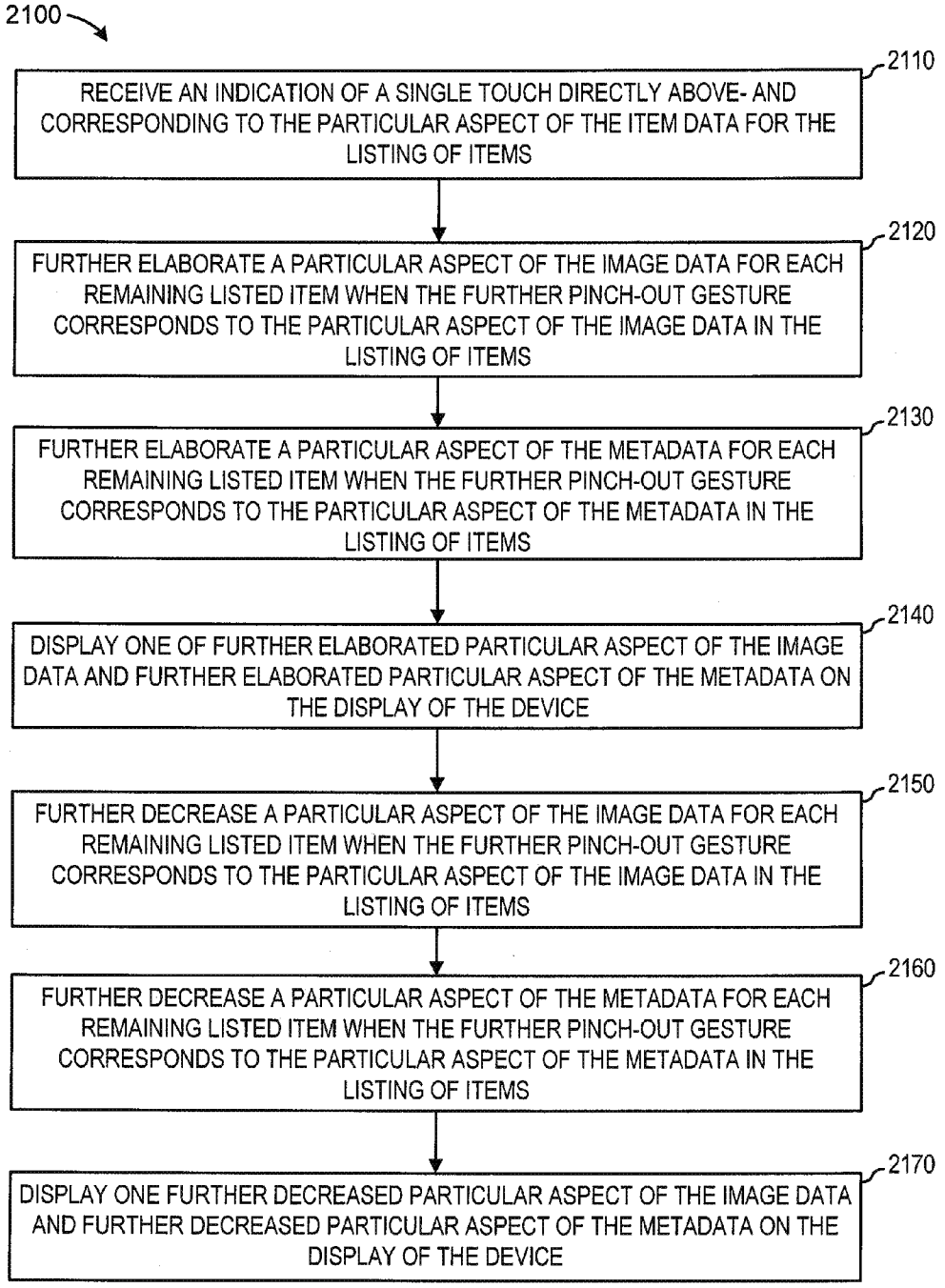

2100
RECEIVE AN INDICATION OF A SINGLE TOUCH DIRECTLY ABOVE- AND CORRESPONDING TO THE PARTICULAR ASPECT OF THE ITEM DATA FOR THE LISTING OF ITEMS
2110
FURTHER ELABORATE A PARTICULAR ASPECT OF THE IMAGE DATA FOR EACH REMAINING LISTED ITEM WHEN THE FURTHER PINCH-OUT GESTURE CORRESPONDS TO THE PARTICULAR ASPECT OF THE IMAGE DATA IN THE LISTING OF ITEMS
2120
FURTHER ELABORATE A PARTICULAR ASPECT OF THE METADATA FOR EACH REMAINING LISTED ITEM WHEN THE FURTHER PINCH-OUT GESTURE CORRESPONDS TO THE PARTICULAR ASPECT OF THE METADATA IN THE LISTING OF ITEMS
2130
DISPLAY ONE OF FURTHER ELABORATED PARTICULAR ASPECT OF THE IMAGE DATA AND FURTHER ELABORATED PARTICULAR ASPECT OF THE METADATA ON THE DISPLAY OF THE DEVICE
2140
FURTHER DECREASE A PARTICULAR ASPECT OF THE IMAGE DATA FOR EACH REMAINING LISTED ITEM WHEN THE FURTHER PINCH-OUT GESTURE CORRESPONDS TO THE PARTICULAR ASPECT OF THE IMAGE DATA IN THE LISTING OF ITEMS
2150
FURTHER DECREASE A PARTICULAR ASPECT OF THE METADATA FOR EACH REMAINING LISTED ITEM WHEN THE FURTHER PINCH-OUT GESTURE CORRESPONDS TO THE PARTICULAR ASPECT OF THE METADATA IN THE LISTING OF ITEMS
2160
DISPLAY ONE FURTHER DECREASED PARTICULAR ASPECT OF THE IMAGE DATA AND FURTHER DECREASED PARTICULAR ASPECT OF THE METADATA ON THE DISPLAY OF THE DEVICE
2170

FIG. 21

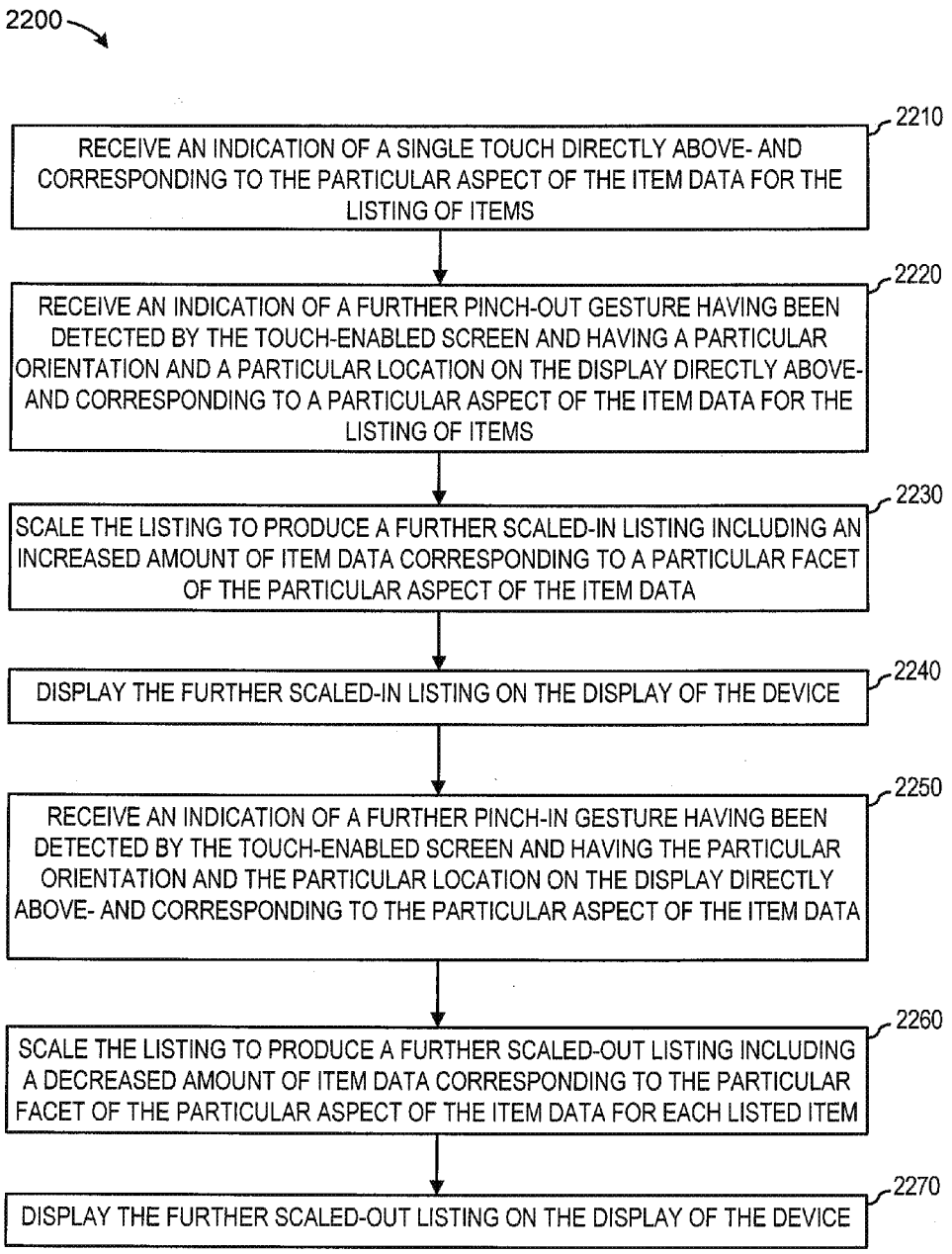

2200
RECEIVE AN INDICATION OF A SINGLE TOUCH DIRECTLY ABOVE- AND CORRESPONDING TO THE PARTICULAR ASPECT OF THE ITEM DATA FOR THE LISTING OF ITEMS
2210
RECEIVE AN INDICATION OF A FURTHER PINCH-OUT GESTURE HAVING BEEN DETECTED BY THE TOUCH-ENABLED SCREEN AND HAVING A PARTICULAR ORIENTATION AND A PARTICULAR LOCATION ON THE DISPLAY DIRECTLY ABOVE- AND CORRESPONDING TO A PARTICULAR ASPECT OF THE ITEM DATA FOR THE LISTING OF ITEMS
2220
SCALE THE LISTING TO PRODUCE A FURTHER SCALED-IN LISTING INCLUDING AN INCREASED AMOUNT OF ITEM DATA CORRESPONDING TO A PARTICULAR FACET OF THE PARTICULAR ASPECT OF THE ITEM DATA
2230
DISPLAY THE FURTHER SCALED-IN LISTING ON THE DISPLAY OF THE DEVICE
2240
RECEIVE AN INDICATION OF A FURTHER PINCH-IN GESTURE HAVING BEEN DETECTED BY THE TOUCH-ENABLED SCREEN AND HAVING THE PARTICULAR ORIENTATION AND THE PARTICULAR LOCATION ON THE DISPLAY DIRECTLY ABOVE- AND CORRESPONDING TO THE PARTICULAR ASPECT OF THE ITEM DATA
2250
SCALE THE LISTING TO PRODUCE A FURTHER SCALED-OUT LISTING INCLUDING A DECREASED AMOUNT OF ITEM DATA CORRESPONDING TO THE PARTICULAR FACET OF THE PARTICULAR ASPECT OF THE ITEM DATA FOR EACH LISTED ITEM
2260
DISPLAY THE FURTHER SCALED-OUT LISTING ON THE DISPLAY OF THE DEVICE
2270

FIG. 22

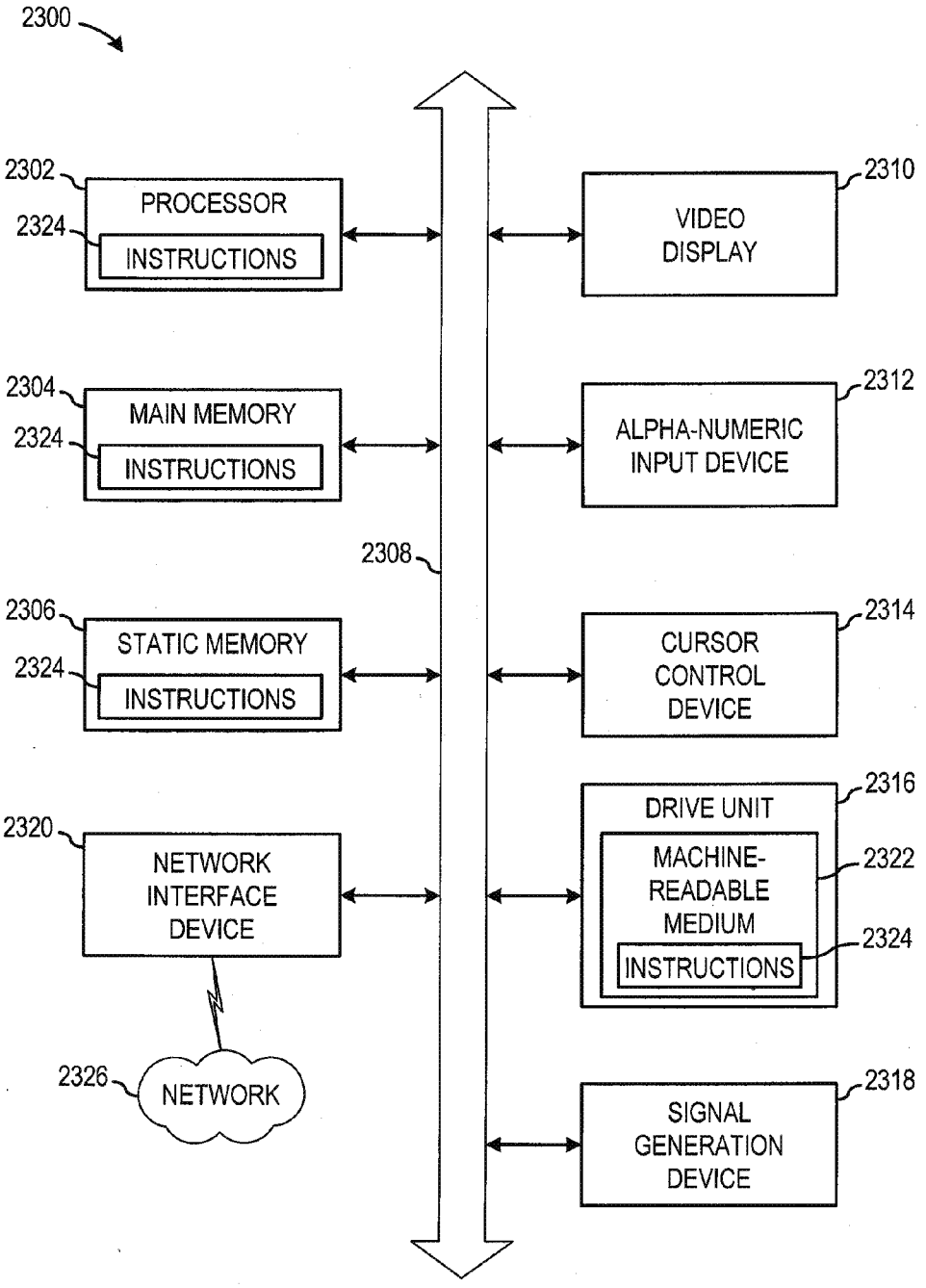

2300
2302
PROCESSOR
2324
INSTRUCTIONS
2304
MAIN MEMORY
2324
INSTRUCTIONS
2306
STATIC MEMORY
2324
INSTRUCTIONS
2320
NETWORK INTERFACE DEVICE
2326
NETWORK
2308
2310
VIDEO DISPLAY
2312
ALPHA-NUMERIC INPUT DEVICE
2314
CURSOR CONTROL DEVICE
2316
DRIVE UNIT
MACHINE-READABLE MEDIUM
2322
INSTRUCTIONS
2324
2318
SIGNAL GENERATION DEVICE

FIG. 23

CONTROL OF SEARCH RESULTS WITH MULTIPOINT PINCH GESTURES

CROSS-REFERENCE TO RELATED PATENT DOCUMENTS

[0001] This patent application is a continuation of U.S. patent application Ser. No. 13/340,367 filed on Dec. 29, 2011, which is a continuation of U.S. patent application Ser. No. 13/197,668 filed on Aug. 3, 2011, the benefit of priority of each of which is claimed hereby, and each of which are incorporated by reference herein in their entirety.

TECHNICAL FIELD

[0002] This application relates to the technical fields of search results display and, in one example embodiment, the control of search results with multipoint pinch gestures.

BACKGROUND

[0003] Users of the World Wide Web may typically perform a significant number of searches in pursuit of general information and online commerce. Such searches may be performed with search engines and network-based commerce systems. With the proliferation of websites for conveying a large volume of information to users, a challenge may exist for users to readily and concisely peruse the vast amount of information available in search results related to website navigation.

[0004] A user may desire to quickly assess the success of search results in matching their needs and expectations for information. To accomplish this assessment a user may desire to expand or contract an amount of information and related details being displayed as a result of an online search. A user's being able to readily display more or fewer details in item listings may allow a more efficient way of determining a match of particular search results with the information desired or whether a further search may be needed.

[0005] A convenient and easy to use interface with a client device may allow the user to quickly elaborate or reduce the amount of detail and refinement of display data, thus offering a quick way of perusing search results. A user may also desire to expand or contract the amount of data being displayed for a particular aspect of the results in an item listing. For example, a user may want to examine older or newer reviews of movies found in an online search for entertainment.

BRIEF DESCRIPTION OF DRAWINGS

[0006] Some embodiments are illustrated by way of example and not limitation in the figures of the accompanying drawings in which:

[0007] FIG. **1** is an illustration of a client device displaying search results, according to an example embodiment;

[0008] FIG. **2** is a block diagram of a search results control system, as may be used in an example embodiment;

[0009] FIGS. **3**A, **3**B, **4**A, and **4**B are diagrammatic representations of a pinch-out and a pinch-in gesture respectively, according to an example embodiment;

[0010] FIGS. **5**A, **5**B, **6**A, and **6**B are diagrammatic representations of a pinch-out gesture performed slowly and rapidly respectively, according to an example embodiment;

[0011] FIGS. **7**A, **7**B, **8**A, and **8**B are diagrammatic representations of a pinch-in gesture performed slowly and rapidly respectively, according to an example embodiment;

[0012] FIGS. **9**A, **9**B, **10**A, and **10**B are diagrammatic representations of a pinch-out gesture performed with a small magnitude gesture and a large magnitude gesture respectively, according to an example embodiment;

[0013] FIGS. **11**A, **11**B, **12**A, and **12**B are diagrammatic representations of a pinch-in gesture performed with a small magnitude gesture and a large magnitude gesture respectively, according to an example embodiment;

[0014] FIGS. **13**A, **13**B, **14**A, and **14**B are diagrammatic representations of pinch-out gestures relating to two particular aspects of display data respectively, according to an example embodiment;

[0015] FIGS. **15**A, **15**B, **16**A, and **16**B are diagrammatic representations of a pinch-out gesture and a pinch-in gesture relating to a particular facet, of a particular aspect of display data, according to an example embodiment;

[0016] FIG. **17** is a flow chart illustrating a method to display a scaled-in listing and a scaled-out listing of item data, according to an example embodiment:

[0017] FIG. **18** is a flow chart illustrating a method to display a scaled-in listing and a scaled-out listing according to velocities and magnitudes of a pinch-out gesture and a pinch-in gesture respectively, according to an example embodiment:

[0018] FIG. **19** is a flow chart illustrating a method to increase and decrease an amount of image data and metadata respectively, by replacing and elaborating on previous data, according to an example embodiment;

[0019] FIG. **20** is a flow chart illustrating a method to use a pinch-out gesture and a pinch-in gesture relating to two particular aspects of display data to scale a listing of items, according to an example embodiment;

[0020] FIG. **21** is a flow chart illustrating a method to scale a listing of items to produce a further scaled-in listing or a further scaled-out listing corresponding to a further pinch-out gesture or a further pinch-in gesture respectively, according to an example embodiment;

[0021] FIG. **22** is a flow chart illustrating a method to use a pinch-out gesture and a pinch-in gesture relating to a particular facet, of a particular aspect of display data to scale a listing of items, according to an example embodiment; and

[0022] FIG. **23** is a block diagram of machine in the example form of a computer system within which is a set of instructions, for causing the machine to perform any one or more of the methodologies discussed herein, that may be executed.

DETAILED DESCRIPTION

[0023] In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of some example embodiments. It will be evident, however, to one skilled in the art that the present invention may be practiced without these specific details.

Environment

[0024] A device with a touch-enabled screen may be configured to accept a user's interaction with the touch screen to control display of the results of online searches for information and ecommerce listings. A user's interaction with a touch screen of the device with multipoint pinch gestures may facilitate navigation through large volumes of data, generally, and in some embodiments, search results. Touch-enabled

navigation with pinch gestures to elaborate or contract the results of a given search may present a more definitive view of those results or present a better indication of the requirement for a further search by the user.

[0025] FIG. **1** depicts a search results control system **100** embodied, for example, as a mobile device **105**, such as a cell phone, engaged in an online commerce session as a client device. The search results control system **100** may incorporate a touch-enabled screen **110** transparently overlaying at least a portion of a display **118**. The display **118** may provide images of a listing **120** of item data, for example, and the touch screen **110** may facilitate user interaction with the listing **120** and control of further search results through multipoint touch gestures (described below). The search results control system **100** may also be embodied as a personal data assistant, an electronic tablet, or a notebook computer (not shown), for example. The search results control system **100** may further be embodied with a desktop (not shown), deskside computer system (not shown), or terminal (not shown), for example.

[0026] Contact with the touch-enabled screen **110** by a user may define a touch point. Touch points may be produced by finger tips (e.g., the tip of a thumb or a forefinger) or by any implement capable of registering contact with the touch-enabled screen **110**. Gestures may be considered as a movement of one or more touch points across the touch-enabled screen **110** performed so as to register a control input to the mobile device **105**. Two-fingered gestures may be known as multipoint touch gestures or multipoint gestures and may be produced by a transition of two fingers from a first position to a second position, for example. In one example embodiment of a multipoint gesture, the thumb and forefinger of a hand are shown moving from a slightly open position **130** to a slightly closed position **140**.

[0027] Multipoint gestures may be pinch gestures which may be characterized by two touch points being moved in relative coordination with one another. For example, a pinch-in gesture may be characterized by a first touch point and a second touch point coming closer together and a pinch-out gesture may be characterized by the first touch point and the second touch point becoming further apart. By placing the tips of two or more fingers on the touch-enabled screen **110**, a user of the mobile device **105** may enter multipoint gestures which may be configured, for example, to impart certain control input information to operations performed by the mobile device **105**.

[0028] In some embodiments, pinch gestures are used in a commerce context or a general information search situation. In other embodiments, pinch gestures may be used in an operating system context. In example embodiments, pinch gestures are used to trigger the generation of further refined search result details through elaboration or less refined search result details through contraction. The elaboration and contraction may be known as information scaling processes. A pinch-in gesture contracts (reduces elaboration) and a pinch-out gesture expands on (elaborates) search results through corresponding scaling process on search results. The pinch-in gesture and the pinch-out gesture may be thought of as controlling aspects of refinement in displayed data and may control various different aspects of refinement of data according to the orientation by which they are applied.

[0029] Product searches on e-commerce sites, such as eBay®, may produce item listings of products presented as an array or grid of detailed pictures, thumbnail pictures, or symbolic image data accompanied by a respective amount of text data describing the accompanying image data. The pinch-out gesture may be used, for example, to focus on fewer thumbnails or images but to have more metadata displayed per product item. The pinch-out gesture may also produce a further refined thumbnail or more detailed picture of the image data portion of a listing item at the same time the further metadata is displayed. In contrast, the pinch-in gesture may be used to produce a display of more thumbnails with each thumbnail having less metadata information displayed. Correspondingly, the pinch-in gesture may also produce less refined thumbnails yet produce more of them for a given abstraction level of display. Application of the pinch-in and pinch-out gestures with a varying magnitude and proportional speed may produce corresponding amounts of contraction and elaboration respectively of search results and listings. Additionally, multipoint pinch gestures may be used in combination with panning and scrolling gestures to provide a complementary set of tools for a user to navigate various aspects and levels of abstraction in search results.

[0030] The search results control system **100** may be embodied, for example, as a tablet, deskside or desktop computer system with a touch-enabled screen overlaying a display (not shown) that may provide similar capabilities to the mobile device **105** described above. The mobile device **105**, the tablet computer system, the deskside computer system, or desktop computer system may, for example, also display results corresponding to a general search of the web with a search engine where the listing **120** depicts an array of item data that may be navigated with multipoint pinch gestures.

System

[0031] FIG. **2** depicts a block diagram with data flow connections between modules of the search results control system **100** according to an example embodiment. The control system **100** may include a processor **205**, a storage module **210**, and the display **118**, each communicatively coupled to a bus **220**. The control system **100** may also include a multipoint touch-sensitive module **225**, and a scaling module **230**, each communicatively coupled to the bus **220**.

[0032] The touch-enabled screen **110** may have touch point recognition and gesture determination facilitated by the multipoint touch-sensitive module **225** working in combination with the processor **205**. The listing **120** may be scaled by the scaling module **230** interacting with the processor **205**, where the particular degree of scaling is determined by receipt of controlling interactions with a user through multipoint gestures input through the touch-enabled screen **110** (FIG. **1**) and processed with the multipoint touch-sensitive module **225**. Control programming, that may be used to facilitate touch point recognition, gesture determination, and control of any of the modules described herein, may be executed on the processor **205**, and stored in the storage module **210**.

Interfaces

[0033] FIGS. **3**A, **3**B, **4**A, and **4**B are diagrammatic representations of pinch-out and pinch-in gestures respectively, according to one example embodiment. More particularly, FIG. **3**A depicts an initial finger position just prior to a pinch-out gesture. This example embodiment of the pinch-out gesture commences with two fingers in a slightly open position **130** on the touch-enabled screen **110** (corresponding to the mobile device **105** in FIG. **1**). The display **118** shows an

image data region **315** and a metadata region **320** corresponding to a listing of item data as may be presented after an online search activity. The image data region **315** shows a stylized-level of image data (e.g., stylized representation of book covers or book title pages) and correspondingly, the metadata region **320** shows a phrase-level abstraction of descriptive metadata corresponding to a midrange-level of abstraction (reference the LISTING ABSTRACTION LEVELS TABLE below) of the online search results.

[0034] FIG. **3**B shows a slightly closed position **140** of the fingers at the conclusion of a pinch-out gesture. The pinch-out gesture consists of the transition, for example, of the thumb and first finger from the slightly open position **130** (FIG. **3**A) to the slightly closed position **140** on the touch-enabled screen **110**. As a result of the pinch-out gesture, the image data region **315** shows a detailed-level abstraction of image data (elaborated or "scaled-in" from the stylized-level of image data in FIG. **3**A) and the metadata region **320** shows a sentence-level abstraction of metadata (scaled-in from the phrase-level abstraction of metadata in FIG. **3**A) corresponding to a detailed-level of abstraction (reference LISTING ABSTRACTION LEVELS TABLE below) of the online search results. In some embodiments, the number of search results displayed as a result of a pinch-out gesture may be less than the number of search results depicted prior to the pinch-out gesture (e.g., the example embodiment of FIG. **3**A).

[0035] FIG. **4**A depicts an initial finger position just prior to a pinch-in gesture. This example embodiment of the pinch-in gesture commences with two fingers in the slightly closed position **140** on the touch-enabled screen **110**. The image data region **315** shows a stylized-level abstraction of image data (as in FIG. **3**A) and correspondingly, the metadata region **320** shows a phrase-level abstraction of metadata (as in FIG. **3**A) corresponding to the midrange-level of abstraction of the online search results.

[0036] FIG. **4**B shows the slightly open position **130** of the fingers at the conclusion of a pinch-in gesture. The pinch-in gesture consists of the transition, for example, of the thumb and first finger from the slightly closed position **140** (FIG. **4**A) to the slightly open position **130** on the touch-enabled screen **110**. As a result of the pinch-in gesture, the image data region **315** shows a characterized-level abstraction of image data (condensed from the stylized-level abstraction of image data in FIG. **4**A) and the metadata region **320** shows a word-level abstraction of metadata (condensed from the phrase-level abstraction of metadata in FIG. **4**A) corresponding to the brief-level of abstraction (reference LISTING ABSTRACTION LEVELS TABLE below) of the online search results.

[0037] As one skilled in the art will readily appreciate, the initial finger position and the finger position at the conclusion of the pinch gesture may vary in the magnitude of separation. Yet, the same gesture may have been performed even though transitions from initial finger positions to concluding finger positions may vary from one example embodiment to another. The skilled artisan would further appreciate that the representation levels of the image data and the metadata may vary considerably from one level of abstraction to another due to information scaling processes. Similarly, the skilled artisan would additionally appreciate that application of pinch gestures to one abstraction level may cause a transition in the display of item data spanning more than one listing abstraction level depending on a magnitude and a velocity of the application of the pinch gesture. For the purposes of the detail descriptions herein, a delineation of gesture finger positions and abstraction levels of exemplary listing metadata are presented in the tables below.

TABLES

[0038]

GESTURE FINGER POSITIONS

Finger Position:	FIG. Element Example:
slightly open	130
midrange	530
slightly closed	140
open	520

LISTING ABSTRACTION LEVELS of IMAGE DATA and METADATA

Listing Abstraction Level	Image Data Level	Metadata Level	Relative Scaling	Relative Pinch Gesture
Subject:	Symbolic	Heading	Scaled-out	Pinched-in
Brief:	Characterized	Word	.	.
Midrange:	Stylized	Phrase	.	.
Detailed:	Detailed	Sentence	.	.
Elaborated:	Photographic	Paragraph	Scaled-in	Pinched-out

[0039] The LISTING ABSTRACTION LEVELS of IMAGE DATA and METADATA table above depicts successive levels of abstraction of listing data from most condensed (subject-level) to the most refined (elaborated-level). The levels of abstraction, the corresponding levels of image data and metadata, as well as the number of levels, and naming conventions correspond to a particular example embodiment. Other listings of items may vary in subject matter, number of levels of abstraction, and terminology. The intermediate abstraction levels, progressing from subject-level to elaborated-level, correspond to increasing refinement of image data and metadata. For example, progressing from the brief-level of abstraction to the midrange-level, the metadata progresses from a word-level (depictions in a word or a few select words) to a phrase-level (depictions in snippets or small portions of sentences).

[0040] The subject-level of abstraction for listing data depicts a symbolic-level of abstraction of image data and a heading-level of abstraction of metadata. Each of these respective representations depicts one of the least amounts of information in a relatively condensed or truncated presentation of item data. For example, symbolic-level of abstraction of image data may be depicted with a simple symbol or line drawing of an outline of a book. The heading-level of abstraction of metadata may be depicted by the title or a portion of the title of the book. In reference to a further condensed abstraction level (not shown) beyond the subject-level of abstraction, the symbolic-level of image data and the heading-level of metadata may be further condensed (in the further condensed abstraction level) to a bullet point and simple subject (e.g., a simple representative word) respectively.

[0041] In the brief-level of abstraction, the characterized-level of image data and the word-level of meta-data depict representations of item data one level more refined (detailed)

than the respective representations at the subject-level of abstraction. The characterized-level of image data may be an artist's characterization of essential features of a more detailed reference image taken as an indicator of pertinent features, for example. The word-level of meta-data may be a selection of a few words or key words that most characteristically capture the metadata corresponding to the listing item.

[0042] The midrange-level of abstraction includes the stylized-level of image data and the phrase-level of metadata representation which depict item data one level further refined than the respective representations at the brief-level of abstraction. The stylized-level of image data may be composed of images implemented with artistic forms and conventions to create appropriate effects for a compact representation of image data. The phrase-level of meta-data may be a select phrase that most concisely captures the metadata corresponding to the listing item.

[0043] In the detailed-level of abstraction the image data and metadata representations of item data are depicted at the detailed-level and the sentence-level respectively. The detailed-level of image data may be depicted as thumbnail images or condensed representations of a photographic image. The sentence-level of metadata may be a selection of sentences representative of a more elaborate textual description of listing items.

[0044] At the elaborated-level of abstraction, image data is depicted at a photographic level (visual data with refinement corresponding to a picture or photograph) and the associated metadata may include complete paragraphs of textual description. The elaborated-level of abstraction represents the most complete and most highly refined representation of image data and metadata corresponding to, for example, the listing items displayed resulting from a search or query.

[0045] FIGS. **5-8** detail velocity-related pinch gesture characteristics and the ensuing item listing results. For instance, the speed of a gesture determines the degree of scaling (elaboration/contraction) of listing results. A faster pinch velocity for the same range (magnitude) of a pinch gesture produces greater scaling of results compared to a slower speed pinch gesture.

[0046] FIG. **5**A depicts an initial finger position just prior to a low velocity pinch-out gesture. This example embodiment of the pinch-out gesture commences with two fingers in a closed position **510** on the touch-enabled screen **110**. The image data region **315** shows a stylized-level abstraction of image data (as in FIG. **3**A) and correspondingly, the metadata region **320** shows a phrase-level abstraction of metadata corresponding to the midrange-level of abstraction of item listings for online search results.

[0047] FIG. **5**B shows an open position **520** of the fingers at the conclusion of the low velocity pinch-out gesture. The low velocity pinch-out gesture consists of a low velocity transition, for example, of the thumb and first finger from the closed position **510** (FIG. **5**A) through the slightly open position **130**, a midrange position **530**, and the slightly closed position **140**, to the open position **520** on the touch-enabled screen **110** in a certain period of time. As a result of the low velocity pinch-out gesture, the image data region **315** shows a detailed-level abstraction of image data (elaborated from the stylized-level abstraction of image data in FIG. **5**A) and the metadata region **320** shows a sentence-level abstraction of metadata (elaborated from the phrase-level abstraction of metadata in FIG. **5**A) corresponding to the detailed-level of abstraction of online search results.

[0048] FIG. **6**A depicts an initial finger position just prior to a high velocity pinch-out gesture. This example embodiment of the pinch-out gesture commences with two fingers in the closed position **510** on the touch-enabled screen **110**. The image data region **315** shows a stylized-level abstraction of image data (as in FIG. **5**A) and correspondingly, the metadata region **320** shows a phrase-level abstraction of metadata corresponding to the midrange-level of abstraction of online search results.

[0049] FIG. **6**B shows the open position **520** of the fingers at the conclusion of the high velocity pinch-out gesture. The high velocity pinch-out gesture consists of the high velocity transition, for example, of the thumb and first finger from the closed position **510** (FIG. **6**A), through the midrange position **530**, to the open position **520** on the touch-enabled screen **110**. The transition takes place, for example, in a period of time less than the transition of the fingers from the closed position **510** to the midrange position **530** as transpiring in the transition of FIGS. **5**A-**5**B. In some embodiments, the time for a high velocity pinch-out gesture may be on the order of half of the amount of time for the low velocity pinch-out gesture. As a result of the high velocity pinch-out gesture, the image data region **315** shows a photographic-level abstraction of image data (elaborated from the stylized-level abstraction of image data in FIG. **6**A) and the metadata region **320** shows a paragraph-level abstraction of metadata (elaborated from the phrase-level abstraction of metadata in FIG. **6**A) corresponding to the elaborated-level of abstraction (reference LISTING ABSTRACTION LEVELS TABLE above) of online search results.

[0050] FIG. **7**A depicts an initial finger position just prior to a low velocity pinch-in gesture. This example embodiment of the pinch-in gesture commences with two fingers in an open position **520** on the touch-enabled screen **110**. The image data region **315** shows a stylized-level abstraction of image data (as in FIG. **5**A) and correspondingly, the metadata region **320** shows a phrase-level abstraction of metadata corresponding to the midrange-level of abstraction of online search results.

[0051] FIG. **7**B shows the closed position **510** of the fingers at the conclusion of the low velocity pinch-in gesture. The low velocity pinch-in gesture consists of a low velocity transition, for example, of the thumb and first finger from the open position **520** (FIG. **7**A) through the slightly closed position **140**, the midrange position **530**, and the slightly open position **130**, to the closed position **510** on the touch-enabled screen **110** in a certain period of time. As a result of the low velocity pinch-in gesture, the image data region **315** shows a characterized-level abstraction of image data (condensed from the stylized-level abstraction of image data in FIG. **7**A) and the metadata region **320** shows a word-level abstraction of metadata (condensed from the phrase-level abstraction of metadata in FIG. **7**A) corresponding to the brief-level of abstraction of online search results.

[0052] FIG. **8**A depicts an initial finger position just prior to a high velocity pinch-in gesture. This example embodiment of the pinch-in gesture commences with two fingers in the open position **520** on the touch-enabled screen **110**. The image data region **315** shows a stylized-level abstraction of image data (as in FIG. **7**A) and correspondingly, the metadata region **320** shows a phrase-level abstraction of metadata corresponding to the midrange-level of abstraction of online search results.

[0053] FIG. **8**B shows the closed position **510** of the fingers at the conclusion of the high velocity pinch-in gesture. The

high velocity pinch-in gesture consists of the high velocity transition, for example, of the thumb and first finger from the open position **520** (FIG. **8**A), through the midrange position **530**, to the closed position **510** on the touch-enabled screen **110**. The transition takes place, for example, in a period of time less than the transition of the fingers from the open position **520** to the midrange position **530** as transpiring in the transition of FIGS. **7**A-**7**B. In some embodiments, the time for a high velocity pinch-in gesture may be on the order of half of the amount of time for the low velocity pinch-in gesture. As a result of the high velocity pinch-in gesture, the image data region **315** shows a symbolic-level abstraction of image data (condensed from the stylized-level abstraction of image data in FIG. **8**A) and the metadata region **320** shows a heading-level abstraction of metadata (condensed from the phrase-level abstraction of metadata in FIG. **8**A) corresponding to the subject-level of abstraction (reference LISTING ABSTRACTION LEVELS TABLE above) of online search results.

[0054] FIGS. **9-12** detail magnitude-related pinch gesture characteristics and the ensuing item listing results. For instance, the magnitude of a gesture determines the degree of scaling (elaboration/contraction) of listing results. A larger pinch range or magnitude for the same velocity of a pinch gesture produces greater scaling of results compared to a smaller range pinch gesture.

[0055] FIG. **9**A depicts an initial finger position just prior to a small magnitude pinch-out gesture. This example embodiment of the pinch-out gesture commences with two fingers in the slightly open position **130** on the touch-enabled screen **110**. The image data region **315** shows a characterized-level abstraction of image data and correspondingly, the metadata region **320** shows a word-level abstraction of metadata corresponding to the brief-level of abstraction of online search results.

[0056] FIG. **9**B shows the slightly closed position **140** of the fingers at the conclusion of the small magnitude pinch-out gesture. The small magnitude pinch-out gesture consists of a small magnitude transition, for example, of the thumb and first finger from the slightly open position **130** (FIG. **9**A) to the slightly closed position **140** on the touch-enabled screen **110** in a certain period of time. As a result of the small magnitude pinch-out gesture, the image data region **315** shows a detailed-level abstraction of image data (elaborated from the characterized-level abstraction of image data in FIG. **9**A) and the metadata region **320** shows a sentence-level abstraction of metadata (elaborated from the word-level abstraction of metadata in FIG. **9**A) corresponding to the detailed-level of abstraction of online search results.

[0057] FIG. **10**A depicts an initial finger position just prior to a large magnitude pinch-out gesture. This example embodiment of the pinch-out gesture commences with two fingers in the closed position **510** on the touch-enabled screen **110**. The image data region **315** shows a symbolic-level abstraction of image data and correspondingly, the metadata region **320** shows a heading-level abstraction of metadata corresponding to the subject-level of abstraction of online search results.

[0058] FIG. **10**B shows the open position **520** of the fingers at the conclusion of the large magnitude pinch-out gesture. The large magnitude pinch-out gesture consists of the large magnitude transition, for example, of the thumb and first finger from the closed position **510** (FIG. **10**A) to the open position **520** on the touch-enabled screen **110**. The transition takes place, for example, in a period of time about the same as the transition of the fingers from the slightly open position **130** to the slightly closed position **140** transpiring in the transition of FIGS. **9**A-**9**B (i.e., transpiring with about the same velocity). As a result of the large magnitude pinch-out gesture, the image data region **315** shows a photographic-level abstraction of image data (elaborated from the symbolic-level abstraction of image data in FIG. **10**A) and the metadata region **320** shows a paragraph-level of abstraction of metadata (elaborated from the heading-level abstraction of metadata in FIG. **10**A) corresponding to the subject-level of abstraction of online search results.

[0059] FIG. **11**A depicts an initial finger position just prior to a small magnitude pinch-in gesture. This example embodiment of the pinch-in gesture commences with two fingers in the slightly closed position **140** on the touch-enabled screen **110**. The image data region **315** shows a detailed-level abstraction of image data and correspondingly, the metadata region **320** shows a sentence-level abstraction of metadata corresponding to the detailed-level of abstraction of online search results.

[0060] FIG. **11**B shows the slightly open position **130** of the fingers at the conclusion of the small magnitude pinch-in gesture. The small magnitude pinch-in gesture consists of a small magnitude transition, for example, of the thumb and first finger from the slightly closed position **140** (FIG. **11**A) to the slightly open position **130** on the touch-enabled screen **110** in a certain period of time. As a result of the small magnitude pinch-in gesture, the image data region **315** shows a characterized-level abstraction of image data (condensed from the detailed-level abstraction of image data in FIG. **11**A) and the metadata region **320** shows a word-level abstraction of metadata (condensed from the sentence-level abstraction of metadata in FIG. **11**A) corresponding to the brief-level of abstraction of online search results.

[0061] FIG. **12**A depicts an initial finger position just prior to a large magnitude pinch-in gesture. This example embodiment of the pinch-in gesture commences with two fingers in the open position **520** on the touch-enabled screen **110**. The image data region **315** shows a photographic-level abstraction of image data and correspondingly, the metadata region **320** shows a paragraph-level abstraction of metadata corresponding to the elaborated-level of abstraction of online search results.

[0062] FIG. **12**B shows the closed position **510** of the fingers at the conclusion of the large magnitude pinch-in gesture. The large magnitude pinch-in gesture consists of the large magnitude transition, for example, of the thumb and first finger from the open position **520** (FIG. **12**A) to the closed position **510** on the touch-enabled screen **110**. The transition takes place, for example, in a period of time about the same as the transition of the fingers from the slightly closed position **140** to the slightly open position **130** as transpiring in the transition of FIGS. **11**A-**11**B (i.e., transpiring with about the same velocity). As a result of the large magnitude pinch-in gesture, the image data region **315** shows a symbolic-level abstraction of image data (condensed from the photographic-level abstraction of image data in FIG. **12**A) and the metadata region **320** shows a heading-level abstraction of metadata (condensed from the paragraph-level abstraction of metadata in FIG. **12**A) corresponding to the subject-level of abstraction of online search results.

[0063] FIGS. **13-16** depict pinch gestures producing display listings based on a certain portion of the display **118** and a certain aspect of listing data associated with the execution of the gestures.

[0064] FIG. **13**A, for example, shows an indication of a single touch gesture **1310** being applied directly above and corresponding to a particular aspect of the item data for the listing of items. The single touch gesture **1310** may be performed directly above the image data region **315** which may show the characterized-level abstraction of image data.

[0065] In FIG. **13**B, the pinch-out gesture is applied in the image data region **315** subsequent to application of the single touch gesture **1310** there. The ensuing locations of application of the fingers to the touch-enabled screen **110** in performing the pinch-out gesture, may transition along a vertical dimension of the display **118** from the slightly open position **130** to the open position **520** over the image data region **315**. The pinch-out gesture may result in an elaboration of the contents of the image data region **315** and may correspondingly show a detailed-level abstraction of image data elaborated from the characterized-level abstraction of image data. In this example, the display of metadata in the metadata region **320** is not altered by application of the pinch-out gesture in the image data region **315**. The pinch-out gesture may be applied within a range of fifteen to thirty degrees of a vertical axis of the display **118** to be recognized as having been applied to a particular display region.

[0066] By way of further example, the contents of the image data region **315** in FIG. **13**A may be contracted in correspondence with the application of the pinch-in gesture (not shown) to the corresponding particular portion of the touch-enabled screen **110**. Application of the pinch-in gesture on the image data region **315** may cause the symbolic-level abstraction of image data to be produced in this region as a contraction of the initial characterized-level abstraction of image data. In this example, the display of metadata in the metadata region **320** is not altered by application of the pinch-in gesture in the image data region **315**. Thus, application of the pinch-out/in gestures to certain portions of the display **118** may cause corresponding elaboration/contraction of image data contents of the image data region **315** only.

[0067] FIG. **14**A, for example, shows a further indication of the single touch gesture **1310** directly above and corresponding to a further aspect of the item data for the listing of items. The further indication of the single touch gesture **1310** may be performed directly above the metadata region **320** which may show the word-level abstraction of metadata.

[0068] In FIG. **14**B, the pinch-out gesture is applied in the metadata region **320** subsequent to application of the single touch gesture **1310** there. The ensuing locations of application of the fingers to the touch-enabled screen **110** in performing the pinch-out gesture, may transition in a vertical dimension of the display **118** from the slightly open position **130** to the open position **520** over the metadata region **320**. The pinch-out gesture may result in an elaboration of the contents of the metadata region **320** and may correspondingly show the sentence-level abstraction of metadata elaborated from the word-level abstraction of metadata. In this example, the display of image data in the image data region **315** is not altered by application of the pinch-out gesture in the metadata region **320**. The pinch-out gesture may be applied within a range of fifteen to thirty degrees of the vertical axis of the display **118** to be recognized as having been applied to a particular display region.

[0069] By way of further example, the contents of the metadata region **320** in FIG. **14**A may be contracted in correspondence with the application of the pinch-in gesture (not shown) to the corresponding particular portion of the touch-enabled screen **110**. Application of the pinch-in gesture on the metadata region **320** may cause the heading-level abstraction of metadata to be produced in this region as a contraction of the initial word-level abstraction of metadata. In this example, the display of image data in the image data region **315** is not altered by application of the pinch-in gesture in the metadata region **320**. Thus, application of the pinch-out/in gestures to certain portions of the display **118** may cause corresponding elaboration/contraction of metadata contents of the metadata region **320** only.

[0070] FIG. **15**A, for example, shows an indication of the single touch gesture **1310** being applied directly above and corresponding to a particular facet of the particular aspect of the item data in the metadata region **320**. In particular, the single touch gesture **1310** may be applied directly above the facet of the aspect of item data corresponding to a date, for example, of the item data. The particular aspect of the item data may be the metadata and the particular facet of this aspect may be the date of the metadata corresponding to the item data in the metadata region **320**.

[0071] In FIG. **15**B, a subsequent application of the pinch-out gesture in the metadata region **320**, where the ensuing locations of application of the fingers to the touch-enabled screen **110** may transition in a horizontal dimension of the display **118** from the slightly open position **130** to the open position **520**. The horizontal application of the pinch-out gesture may result in an elaboration of the date facet of the metadata aspect of the item data. The metadata region **320** may correspondingly show a further elaboration of the metadata spanning backward in time from an initial temporal indicator to a prior temporal indicator within the sentence-level abstraction. For example, the initial temporal indicator may be July 2009 and the prior temporal indicator may be May 2008 subsequent to the horizontal application of the pinch-out gesture. In this example, the display of image data in the image data region **315** is not altered by application of the pinch-out gesture in the metadata region **320**. The pinch-out gesture may be applied within a range of fifteen to thirty degrees of a horizontal axis of the display **118**.

[0072] FIG. **16**A shows a further indication of the single touch gesture **1310**, for example, directly above and corresponding to the same facet of the further aspect of the item data as in the above described situation in FIG. **15**A.

[0073] In FIG. **16**B, subsequent to application of the pinch-in gesture (as opposed to the pinch-out gesture in FIG. **15**B) in the metadata region **320**, where the ensuing locations of application of the fingers to the touch-enabled screen **110** may transition in about a horizontal dimension of the display **118** from the open position **520** to the slightly open position **130**. Application of the pinch-in gesture may result in an elaboration of the date facet of the further aspect of the metadata complementary to that of FIG. **15**B. Subsequent to application of the pinch-in gesture, the metadata region **320** may show a further elaboration of the metadata spanning forward in time from an initial temporal indicator to a later temporal indicator within the sentence-level abstraction. For example, the initial temporal indicator may be July 2009 and the later temporal indicator may be April 2011 subsequent to the horizontal application of the pinch-in gesture. In this example, the display of image data in the image data region **315** is not

altered by application of the pinch-in gesture in the metadata region **320**. The pinch-in gesture may be applied within a range of fifteen to thirty degrees of the horizontal axis of the display **118**.

Example Methods

[0074] FIG. **17** depicts an example method of using a pinch-out and a pinch-in gesture (corresponding to FIGS. **3**A,B and **4**A,B respectively) to display a scaled-in listing and a scaled-out listing of item data **1700** respectively on the display **118** of a device. The device may correspond, for example, to the mobile device **105** as described in FIG. **1** above. The method commences at operation **1710** with causing a listing of items and corresponding item data to be displayed on the display **118** of the device. The item data includes, for each respective item, at least one of image data, displayed in the image data region **315**, and descriptive metadata, displayed in the metadata region **320** of the display **118**. The method continues with receiving **1720** an indication of a pinch-out gesture having been detected by the touch-enabled screen **110**.

[0075] In response to the indication of the pinch-out gesture, the method proceeds with scaling **1730** the listing to produce a scaled-in listing including fewer of the listing items. The scaled-in listing also includes an increased amount of image data and metadata for each remaining listed item after the scaled-in process. In response to the production of the scaled-in listing, the method causes **1740** the scaled-in listing to be displayed on the display **118** of the device. The method progresses with receiving **1750** an indication of a pinch-in gesture having been detected by the touch-enabled screen **110** on the device.

[0076] The method continues, in response to the indication of the pinch-in gesture, by scaling **1760** the listing to produce a scaled-out listing including more of the items, the scaled-out listing also including a decreased amount of image data and metadata for each listed item. In response to the production of the scaled-out listing, that method causes **1770** the scaled-out listing to be displayed on the display **118** of the device. The method may be performed by the display **118**, the multipoint touch-sensitive module **225**, the scaling module **235**, the processor **205**, and storage module **210**, or any further components and modules described herein.

[0077] FIG. **18** depicts an example method to display a scaled-in listing and a scaled-out listing according to velocities and magnitudes of a pinch-out gesture and a pinch-in gesture **1800** respectively. The method commences, where the indication **1810** of the pinch-out gesture includes a pinch-out velocity, a pinch-out magnitude, and a pinch-out orientation being a velocity, a distance, and an angle respectively, according to which the distance between the first touch point and the second touch point increases. The method continues with scaling **1820** the listing to produce the scaled-in listing at a rate corresponding to the pinch-out velocity (FIGS. **5**A-B and **6**A-B). The listing is scaled **1830** to produce the scaled-in listing by an amount corresponding to the pinch-out magnitude (FIGS. **9**A-B and **10**A-B), where each of the scaling processes may be indicated by a particular pinch-out orientation.

[0078] An indication **1840** of a pinch-in gesture includes a pinch-in velocity, a pinch-in magnitude, and a pinch-in orientation being a velocity, a distance, and an angle respectively, according to which the distance between the first touch point and the second touch point decreases. The method proceeds by scaling **1850** the listing to produce the scaled-out listing at a rate corresponding to the pinch-in velocity (FIGS. **7**A-B and **8**A-B). The listing is scaled **1860** to produce the scaled-out listing by an amount corresponding to the pinch-in magnitude (FIGS. **11**A-B and **12**A-B). Each of the scaling processes may be indicated at a particular pinch-in orientation. The method may be performed by the display **118**, the multipoint touch-sensitive module **225**, the scaling module **235**, the processor **205**, and storage module **210**, or any further components and modules described herein.

[0079] FIG. **19** depicts an example method to increase and decrease an amount of image data and metadata corresponding to an application of the pinch-out and the pinch-in gesture respectively (FIGS. **3**A-B and **4**A-B respectively), by replacing and elaborating or condensing previous data **1900**. The method commences with increasing **1910** the amount of image data during application of the pinch-out gesture by replacing previous image data with at least one of a photograph, a thumbnail, a stylization, a characterization, and a symbolic image data. The method continues with increasing **1920** the amount of metadata during application of the pinch-out gesture by elaborating on at least one of a paragraph, a selection of sentences, a select phrase, a selection of words, and a heading.

[0080] The method goes on with decreasing **1930** the amount of image data, during application of the pinch-in gesture, by replacing previous image data with at least one of a thumbnail, a stylization, a characterization, symbolic image data, and a bullet point. The method concludes with decreasing **1940** the amount of metadata during application of the pinch-in gesture by replacing previous metadata with at least one of a selection of sentences, a select phrase, a selection of words, a heading, and a subject. The method, for example, may be performed by the display **118**, the multipoint touch-sensitive module **225**, the scaling module **235**, the processor **205**, and storage module **210**, or any further components and modules described herein.

[0081] FIG. **20** depicts an example method which uses a pinch-out gesture and a pinch-in gesture (corresponding to FIGS. **3**A-B and **4**A-B respectively) that relate to two particular aspects of display data to scale a listing of items **2000**. The method commences with receiving **2010** an indication of a further pinch-out gesture having been detected by the touch-enabled screen **110** at a location on the display **118** directly above and corresponding to a particular aspect of the item data in the listing of items. The touch points of the gesture may be applied in either the image data region **315** or the metadata region **320** of the display **118**. A touch point gesture applied in the image data region **315** may perform corresponding scaling processes with regard to the image data aspect of the item data. Similarly, a touch point gesture applied in the metadata region **320** may perform corresponding scaling processes with regard to the image data aspect of the item data.

[0082] The method continues where, in response to the indication of the further pinch-out gesture, the listing is scaled **2020** to produce a further scaled-in listing including an increased amount of item data corresponding to the particular aspect of the item data for each remaining listed item. In response to the production of the further scaled-in listing, the further scaled-in listing is caused **2030** to be displayed on the display **118** of the device. The method proceeds by receiving **2040** an indication of a further pinch-in gesture having been detected by the touch-enabled screen **110** at the location on

the display **118** of the device directly above and corresponding to the particular aspect of the item data.

[0083] In response to the indication of the further pinch-in gesture, the method concludes by scaling **2050** the listing to produce a further scaled-out listing including a decreased amount of item data corresponding to the particular aspect of the item data for each listed item. In response to the production of the further scaled-out listing, the method proceeds by causing **2060** the further scaled-out listing to be displayed on the display **118** of the device. The method may be performed by the display **118**, the multipoint touch-sensitive module **225**, the scaling module **235**, the processor **205**, and storage module **210**, or any further components and modules described herein.

[0084] FIG. **21** depicts an example method of scaling a listing of items according to a further pinch-out gesture and a further pinch-in gesture **2100** respectively (corresponding to FIGS. **3**A,B and **4**A,B respectively). The method commences with receiving **2110** an indication of a single touch (FIGS. **13**A, **14**A) directly above and corresponding to the particular aspect of the item data for the listing of items produced on the display **118** of the device. The single touch of either of the further gestures may be applied in either the image data region **315** or the metadata region **320** of the display **118**. A touch and associated touch point gesture applied in the image data region **315** may perform corresponding scaling processes with regard to the image data aspect of the item data. Similarly, a single touch and associated touch point gesture applied in the metadata region **320** may perform corresponding scaling processes with regard to the metadata aspect of the item data.

[0085] The method continues by further elaborating **2120** a particular aspect of the image data for each remaining listed item when the further pinch-out gesture corresponds to the particular aspect of the image data (FIG. **13**B) in the listing of items. The method continues by further elaborating **2130** a particular aspect of the metadata for each remaining listed item when the further pinch-out gesture corresponds to the particular aspect of the metadata (FIG. **14**B) in the listing of items. The method then proceeds by causing **2140** one of further elaborated particular aspect of the image data and further elaborated particular aspect of the metadata to be displayed on the display **118** of the device.

[0086] The method proceeds by further decreasing **2150** a particular aspect of the image data for each remaining listed item when the further pinch-out gesture corresponds to the particular aspect of the image data in the listing of items and further decreasing **2160** a particular aspect of the metadata for each remaining listed item when the further pinch-out gesture corresponds to the particular aspect of the metadata in the listing of items. The method concludes by causing **2170** one of further decreased particular aspect of the image data and further decreased particular aspect of the metadata to be displayed on the display **118** of the device. The method may be performed, for example, by the display **118**, the multipoint touch-sensitive module **225**, the scaling module **235**, the processor **205**, and storage module **210**, or any further components and modules described herein.

[0087] FIG. **22** depicts an example method of using a pinch-out gesture and a pinch-in gesture relating to a particular facet **2200** of a particular aspect of display data to scale a listing of items. The method commences by receiving **2210** an indication of a single touch directly above and corresponding to the particular aspect of the item data for the listing of items. The single touch may be produced directly over the metadata region **320** (FIG. **15**A), for example.

[0088] The method continues with receiving **2220** an indication of a further pinch-out gesture having been detected by the touch-enabled screen **110**, the indication having a particular orientation and a particular location on the display **118** directly above and corresponding to a particular aspect of the item data for the listing of items. The further pinch-out gesture may be produced directly over the metadata region **320** (FIG. **15**B), for example. A horizontal application of the pinch-out gesture may result in an elaboration of a date facet of the metadata aspect of the item data. The metadata region **320** may correspondingly show a further elaboration of the metadata spanning backward in time from an initial temporal indicator to a prior temporal indicator within the sentence-level abstraction. The pinch-out gesture may be applied within a range of fifteen to thirty degrees of a horizontal axis of the display **118**.

[0089] In response to the indication of the further pinch-out gesture, the method scales **2230** the listing to produce a further scaled-in listing including a further amount of item data corresponding to a facet of the particular aspect of the item data. For example, the initial temporal indicator may be July 2009 and the prior temporal indicator may be May 2008 subsequent to the horizontal application of the pinch-out gesture. In response to the production of the further scaled-in listing, the method causes **2240** the further scaled-in listing to be displayed on the display **118** of the device.

[0090] The method proceeds by receiving **2250** an indication of a further pinch-in gesture having been detected by the touch-enabled screen **110**, the indication having the particular orientation and the particular location on the display **118** directly above and corresponding to the particular aspect of the item data for the listing of items. The further pinch-in gesture may be produced directly over the metadata region **320** (FIG. **16**B), for example. Note that the further pinch-in gesture may have been preceded by receiving **2210** an indication of a single touch directly above and corresponding to the particular aspect of the item data for the listing of items. The single touch may be produced directly over the metadata region **320** (FIG. **16**A), for example.

[0091] A horizontal application of the further pinch-in gesture may result in an elaboration of the date facet of the metadata aspect of the item data complementary to the horizontal application of the pinch-out gesture. Subsequent to application of the pinch-in gesture, the metadata region **320** may show a further elaboration of the metadata spanning forward in time from an initial temporal indicator to a later temporal indicator within the sentence-level abstraction. The pinch-in gesture may be applied within a range of fifteen to thirty degrees of the horizontal axis of the display **118**.

[0092] In response to the indication of the further pinch-in gesture, the method scales **2260** the listing to produce a further scaled-out listing including a further amount of item data corresponding to the facet of the particular aspect of the item data for each listed item. For example, the initial temporal indicator may be July 2009 and the later temporal indicator may be April 2011 subsequent to the horizontal application of the pinch-in gesture. In response to the production of the further scaled-out listing, the method causes **2270** the further scaled-out listing to be displayed on the display **118** of the device. The method may be performed, for example, by the display **118**, the multipoint touch-sensitive module **225**, the

scaling module **235**, the processor **205**, and storage module **210**, or any further components and modules described herein.

Modules, Components, and Logic

[0093] Certain embodiments are described herein as including logic or a number of components, modules, or mechanisms. Modules may constitute either software modules (e.g., code embodied on a machine-readable medium or in a transmission signal) or hardware modules. A hardware module is tangible unit capable of performing certain operations and may be configured or arranged in a certain manner. In example embodiments, one or more computer systems (e.g., a standalone, client or server computer system) or one or more hardware modules of a computer system (e.g., a processor or a group of processors) may be configured by software (e.g., an application or application portion) as a hardware module that operates to perform certain operations as described herein.

[0094] In various embodiments, a hardware module may be implemented mechanically or electronically. For example, a hardware module may include dedicated circuitry or logic that is permanently configured (e.g., as a special-purpose processor, such as a field programmable gate array (FPGA) or an application-specific integrated circuit (ASIC)) to perform certain operations. A hardware module may also include programmable logic or circuitry (e.g., as encompassed within a general-purpose processor or other programmable processor) that is temporarily configured by software to perform certain operations. It will be appreciated that the decision to implement a hardware module mechanically, in dedicated and permanently configured circuitry, or in temporarily configured circuitry (e.g., configured by software) may be driven by cost and time considerations.

[0095] Accordingly, the term "hardware module" should be understood to encompass a tangible entity, be that an entity that is physically constructed, permanently configured (e.g., hardwired) or temporarily configured (e.g., programmed) to operate in a certain manner and/or to perform certain operations described herein. Considering embodiments in which hardware modules are temporarily configured (e.g., programmed), each of the hardware modules need not be configured or instantiated at any one instance in time. For example, where the hardware modules include a general-purpose processor configured using software, the general-purpose processor may be configured as respective different hardware modules at different times. Software may accordingly configure a processor, for example, to constitute a particular hardware module at one instance of time and to constitute a different hardware module at a different instance of time.

[0096] Hardware modules can provide information to, and receive information from, other hardware modules. Accordingly, the described hardware modules may be regarded as being communicatively coupled. Where multiple of such hardware modules exist contemporaneously, communications may be achieved through signal transmission (e.g., over appropriate circuits and buses) that connect the hardware modules. In embodiments in which multiple hardware modules are configured or instantiated at different times, communications between such hardware modules may be achieved, for example, through the storage and retrieval of information in memory structures to which the multiple hardware modules have access. For example, one hardware module may perform an operation, and store the output of that operation in a memory device to which it is communicatively coupled. A further hardware module may then, at a later time, access the memory device to retrieve and process the stored output. Hardware modules may also initiate communications with input or output devices, and can operate on a resource (e.g., a collection of information).

[0097] The various operations of example methods described herein may be performed, at least partially, by one or more processors that are temporarily configured (e.g., by software) or permanently configured to perform the relevant operations. Whether temporarily or permanently configured, such processors may constitute processor-implemented modules that operate to perform one or more operations or functions. The modules referred to herein may, in some example embodiments, include processor-implemented modules.

[0098] Similarly, the methods described herein may be at least partially processor-implemented. For example, at least some of the operations of a method may be performed by one or processors or processor-implemented modules. The performance of certain of the operations may be distributed among the one or more processors, not only residing within a single machine, but deployed across a number of machines. In some example embodiments, the processor or processors may be located in a single location (e.g., within a home environment, an office environment or as a server farm), while in other embodiments the processors may be distributed across a number of locations.

[0099] The one or more processors may also operate to support performance of the relevant operations in a "cloud computing" environment or as a "software as a service" (SaaS). For example, at least some of the operations may be performed by a group of computers (as examples of machines including processors), these operations being accessible via a network (e.g., the Internet) and via one or more appropriate interfaces (e.g., Application Program Interfaces (APIs).)

Electronic Apparatus and System

[0100] Example embodiments may be implemented in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations of them. Example embodiments may be implemented using a computer program product, e.g., a computer program tangibly embodied in an information carrier, e.g., in a machine-readable medium for execution by, or to control the operation of, data processing apparatus, e.g., a programmable processor, a computer, or multiple computers.

[0101] A computer program can be written in any form of programming language, including compiled or interpreted languages, and it can be deployed in any form, including as a stand-alone program or as a module, subroutine, or other unit suitable for use in a computing environment. A computer program can be deployed to be executed on one computer or on multiple computers at one site or distributed across multiple sites and interconnected by a communication network.

[0102] In example embodiments, operations may be performed by one or more programmable processors executing a computer program to perform functions by operating on input data and generating output. Method operations can also be performed by, and apparatus of example embodiments may be implemented as, special purpose logic circuitry, e.g., a field programmable gate array (FPGA) or an application-specific integrated circuit (ASIC).

[0103] The computing system can include clients and servers. A client and server are generally remote from each other and typically interact through a communication network. The relationship of client and server arises by virtue of computer programs running on the respective computers and having a client-server relationship to each other. In embodiments deploying a programmable computing system, it will be appreciated that that both hardware and software architectures require consideration. Specifically, it will be appreciated that the choice of whether to implement certain functionality in permanently configured hardware (e.g., an ASIC), in temporarily configured hardware (e.g., a combination of software and a programmable processor), or a combination of permanently and temporarily configured hardware may be a design choice. Below are set out hardware (e.g., machine) and software architectures that may be deployed, in various example embodiments.

Example Machine Architecture and Machine-Readable Medium

[0104] FIG. **23** is a block diagram of machine in the example form of a computer system **2300** within which instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed. In alternative embodiments, the machine operates as a standalone device or may be connected (e.g., networked) to other machines. In a networked deployment, the machine may operate in the capacity of a server or a client machine in server-client network environment, or as a peer machine in a peer-to-peer (or distributed) network environment. The machine may be a personal computer (PC), a tablet PC, a set-top box (STB), a Personal Digital Assistant (PDA), a cellular telephone, a web appliance, a network router, switch or bridge, or any machine capable of executing instructions (sequential or otherwise) that specify actions to be taken by that machine. Further, while only a single machine is illustrated, the term "machine" shall also be taken to include any collection of machines that individually or jointly execute a set (or multiple sets) of instructions to perform any one or more of the methodologies discussed herein.

[0105] The example computer system **2300** includes a processor **2302** (e.g., a central processing unit (CPU), a graphics processing unit (GPU) or both), a main memory **2304** and a static memory **2306**, which communicate with each other via a bus **2308**. The computer system **2300** may further include a video display unit **2310** (e.g., a liquid crystal display (LCD) or a cathode ray tube (CRT)). The computer system **2300** also includes an alphanumeric input device **2312** (e.g., a keyboard), a user interface (UT) navigation device **2314** (e.g., a mouse), a disk drive unit **2316**, a signal generation device **2318** (e.g., a speaker) and a network interface device **2320**.

Machine-Readable Medium

[0106] The disk drive unit **2316** includes a machine-readable medium **2322** on which is stored one or more sets of instructions and data structures (e.g., software) **2324** embodying or utilized by any one or more of the methodologies or functions described herein. The instructions **2324** may also reside, completely or at least partially, within the main memory **2304** and/or within the processor **2302** during execution thereof by the computer system **2300**, the main memory **2304** and the processor **2302** also constituting machine-readable media.

[0107] While the machine-readable medium **2322** is shown in an example embodiment to be a single medium, the term "machine-readable medium" may include a single medium or multiple media (e.g., a centralized or distributed database, and/or associated caches and servers) that store the one or more instructions or data structures. The term "machine-readable medium" shall also be taken to include any tangible medium that is capable of storing, encoding or carrying instructions for execution by the machine and that cause the machine to perform any one or more of the methodologies of the present invention, or that is capable of storing, encoding or carrying data structures utilized by or associated with such instructions. The term "machine-readable medium" shall accordingly be taken to include, but not be limited to, solid-state memories, and optical and magnetic media. Specific examples of machine-readable media include non-volatile memory, including by way of example semiconductor memory devices, e.g., Erasable Programmable Read-Only Memory (EPROM), Electrically Erasable Programmable Read-Only Memory (EEPROM), and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROM and DVD-ROM disks.

[0108] Although an embodiment has been described with reference to specific example embodiments, it will be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the invention. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense. The accompanying drawings that form a part hereof, show by way of illustration, and not of limitation, specific embodiments in which the subject matter may be practiced. The embodiments illustrated are described in sufficient detail to enable those skilled in the art to practice the teachings disclosed herein. Other embodiments may be utilized and derived therefrom, such that structural and logical substitutions and changes may be made without departing from the scope of this disclosure. This Detailed Description, therefore, is not to be taken in a limiting sense, and the scope of various embodiments is defined only by the appended claims, along with the full range of equivalents to which such claims are entitled.

[0109] Such embodiments of the inventive subject matter may be referred to herein, individually and/or collectively, by the term "invention" merely for convenience and without intending to voluntarily limit the scope of this application to any single invention or inventive concept if more than one is in fact disclosed. Thus, although specific embodiments have been illustrated and described herein, it should be appreciated that any arrangement calculated to achieve the same purpose may be substituted for the specific embodiments shown. This disclosure is intended to cover any and all adaptations or variations of various embodiments. Combinations of the above embodiments, and other embodiments not specifically described herein, will be apparent to those of skill in the art upon reviewing the above description.

What is claimed is:

1. A system comprising:

at least one processor, and

memory including instructions that, when executed by the at least one processor, cause the system to perform operations comprising:

displaying a listing of items in an item data display area on a display of a device, the listing of items including item data corresponding to each respective item in the listing of items;

receiving an indication of a pinch gesture from a touch-enabled screen of the device, the indication of a pinch gesture being implemented in association with a scaled-data display area within the item data display area, the pinch gesture including a pinch-in gesture;

scaling a facet of the item data displayed in the scaled-data display area to produce a scaled-facet listing responsive to the pinch gesture, the scaling further comprising:

modifying a degree of a characteristic corresponding with the facet of the item data displayed in the scaled-data display area in an increasing amount responsive to the pinch-in gesture, the modifying further comprising:

producing a scaled-out listing implemented as an updated portion of item data having a later temporal indicator than an initial display of item data by an amount proportional to a magnitude of a pinch gesture characteristic corresponding to the pinch-in gesture; and

displaying the scaled-facet listing in the scaled-data display area, the displaying further comprising displaying an updated set of item data having the modified degree of the characteristic updated by a corresponding pinch gesture, the displaying of the scaled-facet listing replacing previous item data with the scaled-out listing within the scaled-data display area.

2. The system of claim **1**, wherein the pinch gesture characteristic includes any one of a pinch-in velocity, a pinch-in magnitude, and a pinch-in orientation.

3. A method comprising:

displaying a listing of items in an item data display area on a display of a device, the listing of items including item data corresponding to each respective item in the listing of items;

receiving an indication of a pinch gesture from a touch-enabled screen of the device, the indication of a pinch gesture being implemented in association with a scaled-data display area within the item data display area, the pinch gesture including a pinch-in gesture:

scaling a facet of the item data displayed in the scaled-data display area to produce a scaled-facet listing responsive to the pinch gesture, the scaling further comprising:

modifying a degree of a characteristic corresponding with the facet of the item data displayed in the scaled-data display area in an increasing amount responsive to the pinch-in gesture, the modifying further comprising:

producing a scaled-out listing implemented as an updated portion of item data having a later temporal indicator than an initial display of item data by an amount proportional to a magnitude of a pinch gesture characteristic corresponding to the pinch-in gesture; and

displaying the scaled-facet listing in the scaled-data display area, the displaying further comprising displaying an updated set of item data having the modified degree of the characteristic updated by a corresponding pinch gesture, the displaying of the scaled-facet listing replacing previous item data with the scaled-out listing within the scaled-data display area.

4. The method of claim **3**, wherein the pinch gesture characteristic includes any one of a pinch-in velocity, a pinch-in magnitude, and a pinch-in orientation.

5. The method of claim **4**, wherein the pinch gesture characteristic includes a velocity, a distance, and an angle.

6. The method of claim **5**, wherein the velocity, the distance, and the angle of the pinch gesture characteristic correspond to a separation between a first touch point and a second touch point decreases.

7. The method of claim **6**, wherein the scaled-facet listing is produced at a rate corresponding to the pinch-in velocity.

8. The method of claim **6**, wherein the scaled-facet listing is produced by an amount corresponding to the pinch-in magnitude

9. The method of claim **6**, wherein the scaled-facet listing is produced by an amount, indicated with a particular pinch-in orientation.

10. The method of claim **7**, wherein the scaled-facet listing is produced at a rate indicated with a particular pinch-in orientation.

11. The method of claim **8**, wherein the scaled-facet listing is produced by an amount is indicated with a particular pinch-in orientation.

12. One or more hardware storage devices embodying a set of instructions, that when executed by at least one processor, causes the at least one processor to perform operations comprising:

displaying a listing of items in an item data display area on a display of a device, the listing of items including item data corresponding to each respective item in the listing of items;

receiving an indication of a pinch gesture from a touch-enabled screen of the device, the indication of a pinch gesture being implemented in association with a scaled-data display area within the item data display area, the pinch gesture including a pinch-in gesture;

scaling a facet of the item data displayed in the scaled-data display area to produce a scaled-facet listing responsive to the pinch gesture, the scaling further comprising:

modifying a degree of a characteristic corresponding with the facet of the item data displayed in the scaled-data display area in an increasing amount responsive to the pinch-in gesture, the modifying further comprising:

producing a scaled-out listing implemented as an updated portion of item data having a later temporal indicator than an initial display of item data by an amount proportional to a magnitude of a pinch gesture characteristic corresponding to the pinch-in gesture; and

displaying the scaled-facet listing in the scaled-data display area, the displaying further comprising displaying an updated set of item data having the modified degree of the characteristic updated by a corresponding pinch gesture, the displaying of the scaled-facet listing replacing previous item data with the scaled-out listing within the scaled-data display area.

13. The one or more hardware storage devices of claim **12**, wherein the pinch gesture characteristic includes any one of a pinch-in velocity, a pinch-in magnitude, and a pinch-in orientation.

14. The one or more hardware storage devices claim **13**, wherein the pinch gesture characteristic includes a velocity, a distance, and an angle.

15. The one or more hardware storage devices claim **14**, wherein the velocity, the distance, and the angle of the pinch gesture characteristic correspond to a separation between a first touch point and a second touch point decreases.

16. The one or more hardware storage devices claim **15**, wherein the scaled-facet listing is produced at a rate corresponding to the pinch-in velocity.

17. The one or more hardware storage devices of claim **15**, wherein the scaled-facet listing is produced by an amount corresponding to the pinch-in magnitude

18. The one or more hardware storage devices of claim **15**, wherein the scaled-facet listing is produced by an amount, indicated with a particular pinch-in orientation.

19. The one or more hardware storage devices of claim **16**, wherein the scaled-facet listing is produced at a rate indicated with a particular pinch-in orientation.

20. The one or more hardware storage devices of claim **17**, wherein the scaled-facet listing is produced by an amount is indicated with a particular pinch-in orientation.

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